

## 10. Landscape and Visual

### 10.1 Introduction

#### 10.1.1 General

This Chapter of the EIS provides an assessment of the landscape and visual impacts for the N9/N10 Kilcullen to Waterford Scheme: Waterford to Powerstown. The southern section covers a length of over almost 64.0km from a tie-in with the proposed N25 Waterford City By-pass Project, close to the River Blackwater in County Kilkenny, to a tie-in at the proposed Powerstown Junction in County Carlow and also part of the N9 Kilcullen to Powerstown Scheme to the north.

In describing the existing and impacted environment, the road development is considered in 3 sections:

- Waterford to King's River Ch. 1+640 to Ch. 31+550
- King's River to Ballyquirke Ch. 31+550 to Ch. 49+289 (including Kilkenny Link Ch. 1+000 to 7+300)
- Ballyquirke to Powerstown Ch. 60+000 to Ch. 76+400

*Note: Chainages between 49+289 and 60+000 are not used in the study.*

#### 10.1.2 Background

The assessment was undertaken during 2003/2004 and follows on from previous reports prepared for the Constraints Study Report and the Route Selection Report for this scheme. This phase of assessment involved reviewing plans and sections of the proposed road development, aerial photography, and various publications, together with visits to the environs of the proposed scheme.

## 10.2 Methodology

### 10.2.1 Basis

The assessment is made with regard to the vulnerability of the landscape to change and to the location of visual receptors relative to the proposed development. The methodology is based on the EPA Guidelines on the information to be contained in Environmental Impact Statements (March 2002) and Advice Notes on Current Practice (in the preparation of Environmental Impact Statements), 2003 and

also takes cognisance of the DOE (UK) Design Manual for Roads and Bridges.

The significance criteria used for the landscape and visual impact assessment are based on the impact levels suggested in the EPA Guidelines on the information to be contained in Environmental Impact Statements (March 2002) as follows:

**Imperceptible Impact** an impact capable of measurement but without noticeable consequences.

**Slight Impact** an impact which causes noticeable changes in the character of the environment without affecting its sensitivities.

**Moderate Impact** an impact that alters the character of the environment in a manner that is consistent with the existing and emerging trends.

**Significant Impact** impact which, by its character, magnitude, duration or intensity alters a sensitive aspects of the environment.

**Profound Impact** an impact, which obliterates sensitive characteristics.

Impacts may be positive, neutral or negative where:

**Positive Impact:** A change, which improves the quality of the environment (for example, improving landscape diversity; removal of existing negatively impacting aspect; etc.).

**Neutral Impact:** A change, which does not affect the quality of the environment.

**Negative Impact:** A change, which reduces the quality of the environment (for example, impact on broadleaved woodland; obstructing an existing view; etc.).

Terms relating to the duration of impacts are as described in the EPA Guidelines comprising, temporary impact (lasting one year or less); short-term impact (lasting one to seven years); medium-term impact (lasting seven to fifteen

years); long-term impact (lasting fifteen to sixty years); and permanent impact (lasting over sixty years).

### 10.2.2 Landscape

Landscape has two separate but closely related aspects. The first is visual impact, i.e. the extent to which a new structure in the landscape can be seen. The second is landscape character impact, i.e. responses that are felt towards the landscape, and draws on the appearance of the land, including shape, form and colour, and their interaction to create specific patterns and pictures that are distinctive to particular localities.

### 10.2.3 Visual Impact

Visual impacts are categorised under 'Visual Intrusion' and 'Visual Obstruction', where:

- Visual intrusion is impact on a view without blocking, and
- Visual obstruction is impact on a view involving blocking thereof.

In reporting on visual impact, three basic assessments are used:

- '*Construction*' the period including the active construction of the road up to completion of works and opening of the road development.
- '*Pre-establishment*' the period including the initial operation of the road where new landscaping is unlikely to provide any effective mitigation. The impact is assessed in the year the road development would open to traffic.
- '*Post-establishment*' impact is assessed in the fifteenth year after opening at which stage proposed landscaping will have developed as effective mitigation as designed. The development of planting to effective visual screening usually requires a period of five to seven years after planting. This need not necessarily be the same as the number of years after opening of road, as planting may be carried out in advance of the completion of the road.

As with any development, the road development can cause either a deterioration or improvement in visual amenity, which is rated in the various Appendices as per the significance criteria given in Section 10.2.1 above.

All properties within 250 metres of the centre-line of the proposed road are listed as well as any property outside of 250 metres which for reason of relative elevation, openness or otherwise is

considered to have an appreciable impact. In general properties outside of 250 metres of the centre-line, which are not considered to have an appreciable impact, are not included. While these properties may have sight of the development, appreciable impact is avoided for reason of aspect, distance, elevation, intervening topography and vegetation or where the view of the development comprises a very small element of the overall panorama.

For each property recorded in the Visual Impact Schedule, the location, type of building, distance of the building from the centre-line of the nearest section of the proposed road and the level of visual impact at the various stages is noted.

### 10.2.4 Landscape Character

The character of the existing landscape setting is evaluated taking account of the various natural and man-made features, such as topography, landform, vegetation, land-use, and built environment. On the basis of the evaluation, and in light of relevant publications, the potential impact on the landscape is assessed. Similarly, relevant planning documentation is reviewed and any potential positive or negative implications discussed.

While the impact on trees, hedgerows and woodlands is considered in this EIS under Terrestrial Ecology (Chapter 11) and Aquatic Ecology and Hydrology (Chapter 12), impact on these features is also set out where they are considered to have a landscape significance. The value of the existing planting may be rated as being of either local, county, regional, national or international importance depending on relevant statutory designations or the designation of associated property, e.g. estates, demesnes, houses etc. The impact is then rated accordingly.

The extent to which significant additional illumination will be visible in the night landscape is taken into account. The introduction of road lighting may affect the character of the landscape and of individual views in the same way as any other element of the road development.

### 10.2.5 Landscape Planning Context

The landscape planning aspects in the area are considered in terms of National Landscape Designations or Listings; County Landscape Designations or Listings and other areas of significant landscape value or amenity not directly designated.

The only national assessment of landscape quality published for Ireland is the 'Inventory of Outstanding Landscapes in Ireland', prepared by An Foras Forbartha in 1977. Many of the areas highlighted in the Inventory were subsequently given protection within the statutory County Development Plans and these plans in many instances designate additional areas.

At a county level the statutory County Development Plans for Kilkenny and Carlow are referenced with regard to landscape and visual aspects.

## 10.3 The Receiving Environment

### 10.3.1 General

Aalen et al., in the 'Atlas of the Irish Rural Landscape' sets the N9/N10 Kilcullen to Waterford Scheme: Waterford to Powerstown between the 'Southern Hill and Vale Area' of the Central Lowland Area of Ireland to the west and the upland 'Caledonian Province of the south-east', to the east. In general, the overall landscape falls southward via the valleys of the River Barrow and Nore. The wider lowland landscape is interrupted by a number of hill and mountain blocks. These upland areas tend to appear more as hills in Kildare and Carlow gradually becoming more isolated and mountainous towards Laois and Kilkenny, e.g. Castlecomer Plateau and Slieve Ardagh Hills. The upland range of the Wicklow Mountains gradually narrows as it stretches southwards through the Blackstairs and Mount Brandon, providing strong upland topography along the east of the corridor.

A range of factors topographical, landuse and vegetation patterns sub-divides the wider landscape of the route corridor into 4 main character areas, (see Existing Landscape Context Figures, Figure 10.1 and 10.2).

**Character Area 1, The River Suir Valley** located at the southern end of the scheme comprises a strongly undulating lowland landscape running east west along the river.

**Character Area 2, The South Kilkenny Uplands**, runs east to west from Tory Hill and associated uplands, across the Blackwater River Valley to the Booley Hills and uplands located west of the existing N9 Waterford Road.

**Character Area 3, The Central Kilkenny Lowlands**, are broad gently undulating and often open high quality agricultural lands, which extend north from the southern uplands as far as the Castlecomer plateau and which run east to and along, the River Barrow lowland valley.

**Character Area 4, the West Carlow/North Kilkenny/East Tipperary Uplands**, runs west from the major Castlecomer Plateau upland in the east through to the Slieve Ardagh Hills in the west. A number of features are of particular significance in terms of local character. Most important among these are:

- Local Character Feature A – Tory Hill
- Local Character Feature B – River Blackwater Valley
- Local Character Feature C – Hugginstown Fen
- Local Character Feature D – Knockadrina Hill
- Local Character Feature E – Kings River Valley.
- Local Character Feature F – South East Face of Castlecomer Plateau
- Local Character Feature G – River Barrow Valley

These features are also described under the 3 scheme sections as previously noted.

### 10.3.2 Waterford to King's River

#### General

The southern section of the proposed route encounters the greatest variation in topography, initially heading north from the undulating lowland of the River Suir Valley before rising initially along the western lower slopes of Tory Hill. Turning northwest the route, east of the N9 road and railway corridor, crosses the existing N9 Kilkenny Waterford Road near Lukeswell and moves onto upland areas on the northern slopes of the Booley Hills uplands at Hugginstown. Turning north again towards the King's River Valley, the route gradually descends into the central Kilkenny Lowlands west of the existing road, before eventually crossing more low-lying gently undulating land north of Knockadrina.

At its most southerly, the valley of the Blackwater River is visually prominent to the west of the route corridor for a distance of approximately 4.5km. Initially the land is only gently undulating within the low-lying valley; as the route leads north-east across the existing N9 and the Dublin to Waterford Railway at Dunkitt. As the route turns northwards the land rises prominently to the north and east towards Tory Hill (295m AOD). While initially rather level and low-lying, north of Ballykeoghan the land rises quickly on eastern slopes of the narrowing Blackwater

valley, with woodland chequering the opposite hillside to the west of the valley. Dropping down to 80 metres AOD, a short section of gently sloping land follows, incorporating the steep tree-lined Ballygreek river valley running into Mullinavat from the east. The corridor continues north rising gently and obliquely towards the strongly 'wooded' landscape around Earlsrath. The route gradually rises to over 120m AOD south-east of Lukeswell before turning north-west over the existing N9 Road. North-west of the existing road the route continues to rise towards a height of 140m AOD in passing the relatively remote setting of Hugginstown Fen. Heading north again, the route gradually descends through Ballygeardra and Sheepstown where it crosses a tributary of the Little Arrigle River at approx 60m AOD. The route rises again over improving and enlarging agricultural fields skirting to the west (at almost 100m AOD) of the prominently wooded hill at Knockadrina (over 140m AOD) as it leads towards the King's River valley (50m AOD).

#### **Vegetation, Field Pattern and Scale**

Along the route vegetation is primarily confined to field boundaries and river valleys. Though occasionally significant small copses of trees are dispersed along the route prominently around Ballygreek River (Ch. 10+000); Earlsrath (Ch. 12+500); Gorrue/Hugginstown (Ch. 18+200); Ballygeardra (Ch. 23+500); Knockadrina Hill (Ch. 27+250); Rathduff/Kellsboro (King's River – Ch. 31+560). Coniferous forestry is generally restricted to more upland areas but nevertheless is prominent along the route at Tory Hill, north of Hugginstown (Ch. 18+800) and at Coolmore (Ch. 21+900).

Field sizes are generally small to medium but notably increasing in size to be occasionally large towards the north. Similarly the scale of the landscape varies between intimate and expansive, depending on the relative elevation and availability of views. Hedgerows are generally very strongly developed with a high degree of associated tree cover often dense and continuous giving a more 'wooded feel' to the landscape than exists in reality.

#### **Land Use and Dwellings**

With the exception of a few small areas of plantation and scrub the study corridor traverses farmland, dispersed arable content generally increasing towards the north. However, poor drainage is a feature of much of the farmland south of Mullinavat; at Hugginstown; Carrickshock and Ballygeardra. The land is

notably of improved nature north of Ballygeardra and approaching the Kings River.

Mullinavat, Ballyhale and Knocktopher are small towns and Lukeswell a small settlement located along the existing N9 Kilkenny to Waterford Road. Otherwise dwellings are widely dispersed along local roads and particularly noticeable along the existing N9 and along county roads running parallel to and east of the N9 between Rathduff and Scairt. The landscape also has numerous traditional farm properties located off the many local roads. In particular, relatively high density of residential development is notable in Dunkitt (Ch 2+000); along the county road west of the proposed mainline and leading south from Ballykeoghan (Ch 3+000 to 5+000); along the three roads running east from Mullinavat (Ch. 9+500 to 11+000) and at Rathduff (Ch. 31+100).

#### **Views and Sense of Place**

While always aware of the presence of the existing N9 and to a lesser degree the railway, the southern part of the route is dominated by the Blackwater River valley Local Character Feature A and the rising land on either side but particularly Tory Hill (Local Character Feature B) to the east. Moving north, the corridor traverses a more intimate agricultural landscape, where views alternate between distant and immediate landscapes. A variety of visual experiences are gained from the numerous minor roads, which traverse the corridor. The importance of hedgerow boundaries with their associated trees is significant in this landscape. North of Mullinavat, the remote or isolated character of the Gorrue/Hugginstown Fen area (Local Character Feature C) (Ch. 18+200) is particularly distinctive, as is the visual quality of the woodland topped hill at Knockadrina (Local Character Feature D) (Ch. 27+250); and the deep set King's River valley at Rathduff/Kellsboro (Ch. 31+560) (Local Character Feature E).

#### **Landscape Planning Context**

The landscape planning aspects in the area are considered in terms of National Landscape Designations or Listings; County Landscape Designations or Listings and other areas of significant landscape value or amenity not directly designated.

#### **National Landscape Designations or Listings**

There are no listings identified as Areas of Outstanding Landscapes close to this section of scheme, the nearest being No. 78 River Nore, south of Thomastown, some 9.0km distant.

### County Landscape Designations or Listings

The section between Waterford and King's River lies entirely within County Kilkenny and the County Development Plan 2002 contains the following landscape and visual references. See Figure 10.1, showing the Landscape Context.

Areas of High Amenity (Map No.7.1 and Appendix E of Volume 1 of Development Plan). There are three areas designated as being of High Amenity along this section of the route:

- *No.9 Area at Tipperary border bounded by roads nos. 364, 363, 346, 488 & 489 (extends west from Mullinavat through Corbally Wood). The area is some 1km west of the proposed route at its nearest point.*
- *No.10 Area bounded to north by N24 and to the south, south east by the River Suir. The area is some 1km south of the proposed route at its commencement.*
- *No.13. Lands to north and south at King's River Valley bounded to south by road no 319. The area runs west to Kells along the King's River from its confluence with the River Nore near Mount Juliet. The proposed route crosses the amenity area and the King's River near its narrowest point at Rathduff/Kellsboro (Ch 31+560).*

Under Views and Prospects, the Plan (Map No. 7.1 and Appendix F of Development Plan) lists the following views in the area: -

- *A10 View North West over the valleys and the confluence of the Nore and King's Rivers on the Stoneyford. Bennettsbridge Road No. LP 4202 between the junctions with road nos LT 42022 and 490. The listing is some 2km east of the route as it crosses the King's River valley.*
- *A20 Views south and north over King's River Valley between Kells and the Waterford Road. The area runs east from Kells along the King's River to the existing N9 Waterford Road. The proposed route crosses the listing in bridging the King's River at Rathduff/Kellsboro (Ch 31+560).*
- *A21 Views south west over the Rivers Suir at Grannagh Castle to the Comeraghs. This listing is some 1km south of the commencement of the route.*

Under Tree Preservation Orders, the Plan (Section 9.6.2 of Volume 1 of Development Plan) indicates that there are no such listings in the general vicinity of the route.

### **Other Landscape Aspects**

Apart from those listed above a number of other aspects of the landscape are noteworthy. See Figure 10.1 and 10.2 Landscape Context.

Historic Landscapes:

- *The remnants of a number of estates are located throughout the study area. The evidence of remnant estates includes stone boundary walls, groups of mature deciduous woodland old entrances and gates etc. Earlsrath (Ch. 12+500); Kilkeasy (Ch. 20+500); Sheepstown (Ch. 24+000) and Flood Hall (Knockadrina Hill at Ch. 27+250) are prominent estates or properties with strong extant estate features along the road corridor. A more detailed description of this aspect of the landscape is given in relation to Archaeology and Cultural Heritage (Chapter 17) and Architectural Heritage (Chapter 18) of this EIS.*

Mature Trees and Woodlands:

- *Significant areas of mature trees and woodland are located at Ballygreek River (Ch. 10+000); Earlsrath (Ch. 12+500); Gorrue/Hugginstown (Ch. 18+200); Ballygeardra (Ch. 23+500); Knockadrina Hill (27+250) and Rathduff/Kellsboro (King's River – Ch. 31+560). Elsewhere, many mature trees and tree lines are associated with established field boundaries. See also the Terrestrial Ecology (Chapter 11) and Aquatic Ecology and Hydrology (Chapter 12).*

Other Areas:

- *Tory Hill rises to some 295m to the east of the proposed route. While of a round nature the elevated vantage point allows for panoramic views over this part of south Kilkenny.*
- *The Gorrue / Hugginstown Fen area is a 'remote or secluded landscape' notable for its diversity of landscape habitat.*
- *The tree-topped Knockadrina Hill is an important local reference and is a scenic feature.*
- *The 'South Leinster Way' approaches Mullinavat from the west before travelling north along the N9 to cross the Ballyknockbeg/Ballylusky rail bridge from where it moves on to the Ballylusky-Earlsrath-Lukeswell County Road.*

- *A holy well is located close to the proposed route to the east of Mullinavat, which is referenced in relation to Archaeology and Cultural Heritage (Chapter 17) of this EIS.*
- *The Blackwater, Derrylackey and King's rivers all have attractive valleys and are local fishing amenities.*
- *Mullinavat, Ballyhale and Knocktopher are small towns on the existing N9 and Mullinavat in particular is an important local service base. Lukeswell is a small settlement also on the existing N9. The high level of existing through traffic, especially heavy goods vehicles, detracts from the village-scape.*
- *Kells and Stoneyford linked by the King's River are small villages with a strong cultural heritage background. Further details in relation to Archaeology and Cultural Heritage (Chapter 17) and Architectural Heritage (Chapter 18) are available in the relevant sections of this EIS.*

### 10.3.3 King's River to Ballyquirke

#### General

The landscape from King's River through to Ballyquike including the Kilkenny Link corridor is one of a high quality and often relatively open farmland set entirely within the Central Kilkenny Lowland Character Area. Topography varies little, with the route generally running between 50m and 80m AOD. Significant hills are generally distant and the southern flanks of the Castlecomer Plateau and Freestone Hill (130+m AOD) set the backdrop for the northern end approaching Ballyquirke. In this open agricultural landscape, strongly tree-lined hedgerows and river valleys are prominent visual features especially along the King's River Valley; the Ennisnag Stream Valley and adjoining plantings; the River Nore valley and the strong plantings at Blanchvillespark together with Lyrath Estate along the proposed Kilkenny Link Road.

#### Vegetation, Field Pattern and Scale

Along the route vegetation is almost primarily confined to field boundaries, river valleys and the strong plantings associated with old estates or period properties. Significant and prominent plantings are located at Kellsboro (King's River – Ch. 31+560); Ennisnag Stream (Ch. 34+100 to 34+600); at Ballyda House (Ch. 35+500); Kilree (Ch. 37+400); Maidenhall (Ch. 37+900); River Nore crossing (Ch. 39+980); Roughfield (Ch. 43+500); Rathcash (Ch. 46+000); Blanchvillespark (Ch. 48+200) and Lyrath Estate

(Ch 3+000 to 4+000 on the Kilkenny Link). Coniferous forestry is rare and not an especially prominent feature of the landscape through this section.

Field sizes are generally medium to very large throughout and as such, the scale of the landscape tends to be more open and expansive. Hedgerows, where present are often strongly developed with a high degree of associated tree cover giving a more 'wooded feel' to the landscape than exists in reality.

#### Land Use and Dwellings

The study corridor traverses a high quality pastoral and arable agricultural landscape. All of the land is of better quality and with few areas of scrub or poorer land.

Bennettsbridge is the only town near the route, though the Kilkenny Link leads westwards to the eastern fringe of an expanding Kilkenny City. Generally dwellings are less noticeable and more widely dispersed along local roads than south of the King's River though the landscape continues to have numerous traditional farm properties located off the local roads. In particular, relatively high density of residential development is notable through Danesfort (Ch 35+300); at Kilree, outside Bennettsbridge (Ch. 39+400); at Holdenstown (Ch. 42+750); at Rathcash and Talbotshill (Ch. 47+000) along the proposed mainline and at Blanchfieldsland near Kilkenny (Ch. 1+000); Archersrath (Ch. 2+000) and Templemartin (Ch. 4+550) along the Kilkenny Link Road.

#### Views and Sense of Place

The section of the route corridor is primarily through high quality agricultural landscape, punctuated by occasional stands of mature trees or copses and the linear features of King's (Ch. 31+560) and Nore (Ch 40+000) river valleys. The Kings River Valley is of particular local significance i.e. Local Character Feature E. In this context, the importance of hedgerow boundaries with their associated trees and tree-lines is significant in this otherwise relatively homogenous landscape. Estate features such as old houses mature plantings; the Obelisk topped mound at Danesfort (Ch. 34+750); and Rathgarvan Castle (Ch. 6+700 on the Kilkenny Link) are also important in providing a sense of place.

#### Landscape Planning Context

The landscape planning aspects in the area is considered in terms of National Landscape Designations or Listings; County Landscape

Designations or Listings and other areas of significant landscape value or amenity not directly designated.

#### National Landscape Designations or Listings

There are no listings identified as Areas of Outstanding Landscapes close to this section of the proposed N9/N10 mainline, the nearest being No. 78 River Nore, south of Thomastown, some 9km to the east. Outstanding landscape No.44 Kilderry Plateau edge, lies some 4km north of the Kilkenny Link.

#### County Landscape Designations or Listings

The section between the King's River and Ballyquirke lies entirely within County Kilkenny and the County Development Plan 2002 contains the following landscape and visual references. See Figure 10.2 Landscape Context.

Areas of High Amenity (Map No.7.1 and Appendix E of Volume 1 of Development Plan). There are two areas designated as being of High Amenity along this section of the route:

- *No.8. Barrow - Nore river valley area bounded by roads nos. 319, 351, 527, 508, 515, 459, 538, 473, 519, 494, 498, Barrow River, roads nos. 694, 628, 672, 529, 524 & 532. The area follows the River Nore north to Bennettsbridge at which point it is some 1km south-east of the proposed route at its nearest point.*
- *No.13. Lands to north and south at King's River Valley bounded to south by road no 319. The area runs west to Kells along the King's River from its confluence with the River Nore near Mount Juliet. The proposed route crosses the amenity area and the King's River near its narrowest point at Rathduff/Kellsboro (Ch 31+560).*

Under Views and Prospects, the Plan (Map No. 7.1 and Appendix F of Development Plan) lists the following views in the area:

- *A10 View North West over the valleys and the confluence of the Nore and King's Rivers on the Stoneyford. Bennetts Bridge Road No. LP 4202 between the junctions with road nos 7LT 42022 and 490. This listing is some 2km east of the route as it crosses the King's River.*
- *A20 Views south and north over King's River Valley between Kells and the Waterford Road. The area runs east from Kells along the King's River to the existing N9 Waterford Road. The proposed route crosses the*

*listing in bridging the King's River at Rathduff/Kellsboro (Ch 31+560).*

Under Tree Preservation Orders, the Plan (Section 9.6.2 of Volume 1 of Development Plan) indicates that there are no such listings in the general vicinity of the route.

#### **Other Landscape Aspects**

Apart from those listed above a number of other aspects of the landscape are noteworthy. See Figure 10.2 Landscape Context.

#### Historic Landscapes

- *The remnants of a number of estates are located throughout the area. The evidence of remnant estates includes stone boundary walls, groups of mature deciduous woodland old entrances and gates etc. Danesfort (Ch. 35+000); Maidenhall (Ch. 37+900); Kilree (Ch. 38+500); Holdenstown (Ch. 42+300); Roughfield (Ch. 43+500); Rathcash (Ch. 46+000); Blanchvillespark (Ch. 48+200) along the mainline and Lyrath Estate (Ch 3+000 to 4+000) and Rathgarvan (Ch. 6+700) on the Kilkenny Link are prominent estates or properties with estate features along the road corridor. A more detailed description of this aspect of the landscape is given in relation to Archaeology and Cultural Heritage (Chapter 17) and Architectural Heritage (Chapter 18) elsewhere in this EIS.*

#### Mature Trees and Woodlands:

- *Significant areas of mature trees and woodlands are located at Kellsboro (King's River – Ch. 31+560); Ennisnag Stream (Ch. 34+100 to 34+600); at Kilree (Ch. 37+400); Maidenhall (Ch. 37+900); River Nore crossing (Ch. 40+100); Roughfield (Ch. 43+500); Blanchvillespark (Ch. 48+200) and Lyrath Estate (Ch 3+000 to 4+000 on the Kilkenny Link). Elsewhere, many mature trees and tree lines are associated with established field boundaries. See also Terrestrial Ecology (Chapter 11) and Aquatic Ecology and Hydrology (Chapter 12).*

#### Other Areas:

- *Kells and Stoneyford linked by the King's River are small villages with a strong cultural heritage background. Further details in relation to Archaeology and Cultural Heritage (Chapter 17) and Architectural Heritage (Chapter 18) are available in the relevant sections of this EIS.*

- *The King's River and the River Nore have an attractive valley and are local fishing, walking and general amenities.*
- *A holy well is located some 500m west of the proposed route as it crosses the Ennisnag Stream.*

### 10.3.4 Ballyquirke to Powerstown

#### **General**

This section from Ballyquirke to Powerstown tends to follow the broad lowland landscape running east and south off the Castlecomer plateau. As such while set along the northern edge of the Central Kilkenny Lowlands the landscape is highly influence by the West Carlow/North Kilkenny/East Tipperary Uplands immediately northwest. Elevation is generally set between 50 and 100 metres AOD.

#### **Vegetation, Field pattern and Scale**

The good soil and sheltered nature of the broad Barrow valley has contributed to the establishment of the large farms and a "well-ordered" landscape characterised by extensive irregularly shaped fields with varyingly strong tree-lined hedgerows. Hedgerow removal in some areas has resulted in larger scale field pattern, particularly as the route moves north.

The only woodland of any scale occurs as two narrow bands of deciduous trees on either side of the river Barrow in the vicinity of the proposed route crossing. Elsewhere many mature trees and tree lines are associated with established field boundaries.

Tributaries of the river Barrow flow from the higher ground to the west. The major tributaries are the Monafelim River, and further north, the Madlin River, which flows through Oldleighlin. The Carlow to Kilkenny railway line follows approximately the line of the existing N9 and the proposed route in a generally north-easterly direction before swinging around the northwest side of Paulstown and crossing the river Barrow to the south of Bagenalstown.

The steeply rising scarp face of the Castlecomer plateau to the west of Ballyquirke is a particularly dominant element in the landscape, and whilst always evident to the west, becomes less dominant as the route moves north. The route corridor itself maintains a consistent character in this locality being of a generally high quality, and typically rural and agricultural in character.

#### **Landuse and Dwellings**

Settlement within the majority of the area is dispersed. However, the attractive self-contained settlement of Oldleighlin (Ch.71+000) lies to the west of the route at the foot of the steep escarpment, which defines the western edge of this section. The route is located some 1.5km from both Oldleighlin and the historic settlement of Leighlinbridge (Ch.71+000), which is situated to the east on the west bank of the River Barrow.

In the vicinity of the proposed Jordanstown overbridge (Jordanstown Junction), the ribbon development spreading west from Paulstown (Ch.75+000) becomes a strong feature of the landscape. Also the busy Killcarrig Quarry at Kellymount (Ch.75+000) is a dominant feature in the landscape, located immediately at the base of the scarp slope to the west of Paulstown. The local road serving the quarry is heavily utilised, causing obvious impact on the local community and the immediate landscape character. Otherwise landuse is predominantly pastoral and arable agriculture. There is no forestry evident along the route.

#### **Views and Sense of Place**

This section of the route corridor runs through mainly good quality agricultural landscape. Since woodland on any scale is absent, hedgerow boundaries, often with well-developed deciduous tree cover, are the significant landscape features. Views along the route are relatively contained due to hedgerow pattern and limited topographic variation. However views from the dramatically rising high ground of the Castlecomer plateau (Local Character Feature F) to the west and north disclose the intricacy of the landscape and its ability to absorb linear development such as roads. The lack of intrusion evident from the railway line provides credence to this assertion. The rising ground to the west in fact provides the setting and hence sense of place for the route, particularly for the southern section. The immediate Barrow River valley (Local Character Feature G) is a significant landscape and amenity corridor east of the proposed route.

#### **Landscape Planning Context**

The landscape planning aspects in the area is considered in terms of National Landscape Designations or Listings; County Landscape Designations or Listings and other areas of significant landscape value or amenity not directly designated.

### National Landscape Designations or Listings

The Barrow Valley running north to south from north of Milford Mills (at Clogrenan) to south of St. Mullins (at Coolhill) forms part of Area of Outstanding Landscape No.29 – Brandon Hill & Barrow Valley. The distinctive features of the area are described as including: - ‘Scenic diversity. Wooded and agricultural land.’ The route passes through the designation for a little over 2km to cross the River barrow at (Ch.75+600)

### County Landscape Designations or Listings

The route between Ballyquirke and Powerstown is located within the administrative area of County Carlow mainly, but also towards the south, in Co. Kilkenny. See Figure Landscape Context.

The following landscape designations are contained in the Carlow County Development Plan, 2003 under landscape and visual references:

Tourism, Amenity and Conservation:

- *At (a) The Barrow Valley is identified as a major amenity area, highlighting the inland waterway for recreation, fishing and walking.*
- *The Council will support the continued development and proper maintenance of the existing walking routes of the South Leinster Way and the Barrow Footpath.*

Views and Prospects:

- *View No. A2 – Views of Barrow Valley, Mount Leinster, Brandon Hill and Backstairs from area of Coolnakisha, Tomard Upper and Tomard Lower.*
- *View No. A9 – Views west from View Mount & Browne’s Hill, east of Carlow Town*
- *View No. A11 – Milford Bridge Area.*
- *The locally limited views A11 and A13 are not impacted by the route. The long distance view A2 from the Castlecomer plateau has been mentioned in the previous section (Views and sense of Place). This view is vast and panoramic. In any case it is considered that rapid integration into the complex mosaic of the landscape will occur. Such integration is illustrated with the railway line, which is itself very difficult to identify in the landscape at such a distance.*

Areas of Natural Interest:

- *Map No.3 on Carlow County Development Plan. Cloughristick Wood (N.I.3) on the east bank of the river Barrow is indicated as an area of natural interest. The wet woodland is described as being of Local botanical, ecological, zoological and ornithological interest.*

### **Other Landscape Aspects**

Apart from those listed above a number of other aspects of the landscape are also noteworthy:

Historic Landscapes:

- *There are no specific areas to highlight here. Further details in relation to Archaeology and Cultural Heritage (Chapter 17) and Architectural Heritage (Chapter 18) are available in the relevant sections of this EIS.*

Mature Trees and Woodlands:

- *Two narrow bands of deciduous woodland extend along either side of the river Barrow.*

## **10.4 Predicted Impacts of the Road Development**

### **10.4.1 General Description of Nature of Impacts**

In general the proposed road development crosses a high quality agricultural and rural landscape where residential development is varyingly dispersed and clustered along the scheme and where the construction associated with such a major road will undoubtedly have significant negative impacts in terms of disturbance to both the landscape and visual environment. Therefore, landscape and visual impact will be most pronounced during the construction stage and in the short term thereafter (pre-establishment stage), when general disturbance at proximity to properties is at its greatest and mitigation planting is either not in place or is limited in its effectiveness.

In general, significant negative visual impact will arise from residential and from other property close to or adjoining the construction boundary. Visual impact will arise primarily from tree and hedgerow screening loss, alteration of ground levels and construction activities. Occasionally impact will arise through visual obstruction where properties are in proximity to embankments under construction. A detailed listing of the various embankments, interchanges and road features is given in the section-by-section description below. A description of impacts on

individual properties is set out in the Landscape Appendix 10.1.

The following main elements have the potential for landscape and visual impact during the construction stage:

- Tree and hedgerow removal;
- General construction disturbance;
- Construction of significant embankments and to a lesser degree cuttings;
- Construction of elevated structures such as bridges; and
- Re-alignments of existing national, regional and county roads.

The features of the operational stage of the proposed road development, which have potential for landscape and visual impact, include the following main elements:

- The presence of significant embankments and to lesser degree cuttings;
- The presence of elevated structures such as interchanges and bridges;
- Traffic during operation;
- Illumination; and
- Noise barriers.

In the context of a road development, elements such as signage, barriers, culverts, fencing etc. are an integral part of most roads and will have little or no landscape or visual impact given their low elevation, limited off scheme visibility and the presence of similar features along the existing and other carriageways.

While landscape and visual impact will be most pronounced during the construction stage and in the short term thereafter (pre-establishment), general negative visual impact will continue to arise from residential and from other property close to or adjoining the road boundary. Visual impact will arise primarily through visual intrusion of elevated sections of embankment, and operational traffic. Occasionally impact will arise through visual obstruction where properties are in proximity to embankments. A description of operational impacts on individual properties is also set out in the Landscape Appendices.

Embankments have the potential for significant visual intrusion and visual obstruction depending on elevation, intervening topography and vegetation etc. As such, embankments and side slopes require careful design and appropriate mitigation to reduce the appearance of scale and

intrusion. Impact on the landscape will also be most pronounced at the junctions where embankments in combination with elevated traffic and illumination will significantly and permanently alter the local character of the immediate vicinity. Again these are discussed in the section-by-section assessment of impact below.

Illumination along the proposed road is to be restricted to part of the access lanes, roundabouts and their approaches over or under bridges at the major interchanges at Mullinavat (No. 1) Knocktopher (No. 2), Danesfort (No. 3), Dunbell (No. 4) Jordanstown (No. 5) and Powerstown (No.6) and also at the various roundabouts and approaches.

Noise attenuation will be required for mitigation at a number of locations along the proposed road development where residential properties are in close proximity to the carriageway. Chapter 8 of this EIS outlines the assessment of noise and the requirements for mitigation. The noise mitigation measures are shown on Figures 4.52 to 4.98, the mainline plans and profiles. Barriers will be either of earth bund, solid timber fence construction or a combination of these. While initially these features may increase the visual presence of the road, in general they will also provide immediate visual screening of the road development and can in most circumstances be appropriately incorporated into the proposed landscaping mitigation.

With the exception of those features of the development described above the road development also entails significant levels of existing national, regional and county road re-alignment, drainage works and accommodation measures, all of which have the potential for landscape and visual impact. Local road re-alignment is a special case in point as many residential properties tend to be sited along these roads.

#### **10.4.2 Waterford to King's River**

##### ***Scheme Description***

The proposed alignment leads north along the lower slopes of land rising to the east overlooking the existing N9 and the Blackwater River valley to the west. The route crosses the existing N9 and Dublin to Waterford Railway (Ch. 2+120) at Dunkitt, from where the route roughly parallels the railway northwards for some distance. North of the railway crossing the route crosses the Ballinacurragh (Ch. 2+930) and Ballynamorahan (Ch. 3+420) Local Roads and continues north along rising land to cross the

Ballykeoghan Local Road (Ch. 5+060). Continuing north the land begins to rise more appreciably along the west flank of Scart Hill. In doing so the alignment crosses the Rossninan (Ch. 6+900) and Scart (Ch. 8+320) Local Roads while closely paralleling the Rossninan to Deerpark Local Road, which has many residential properties varyingly clustered and dispersed along its length.

Descending and approaching Mullinavat, the proposed alignment crosses a densely vegetated local stream and access (Ch. 9+140); Glendonell Local Road (Ch. 9+650); the deep cut wooded valley of Ballygreek Stream (Ch. 10+020); the Ballyquin Road (Ch. 10+100) and the R704 Regional Road (Ch. 10+680). All road crossings are located immediately east of Mullinavat with the crossing of the Ballyquin Road some 150m east of the Church. Mullinavat grade-separated junction (Mullinavat Junction at Ch. 10+740) is located immediately north of the R704 Regional Road a road with many residential properties located along its south side.

North of Mullinavat grade-separated junction, the road cuts through the secluded wooded setting between St. Joseph's (Ch. 11+700) to the east and Earlsrath (Ch. 12+500) to the west. Turning north-west, the route emerges from cutting and rises onto embankment to cross the deep cut valley of the Derrylacky River (Ch. 13+820) some 500m east of Lukeswell. Continuing north-west over Lukeswell Local Road (Ch. 14+060), the alignment crosses the deep cut valley of the existing N9 Waterford Road (Ch. 14+400) with its densely scrub covered side slopes approximately 1km north of Lukeswell.

North-west of the N9, the alignment re-enters deep cutting, passing under Knockmoylan Local Road (Ch. 14+960) south of the large farm complex including Knockmoylan House. Continuing in cutting through small to medium scale open farmland, the route emerges on to high embankment to cross the Dublin to Waterford Railway (Ch. 16+120). The route turns more northerly and rises through small-scale enclosed landscape towards Hugginstown. In doing so the route passes very close to a residential farm property at Ch. 17+000. At Hugginstown the route passes immediately east of the fen close to a second residential farm property at (Ch. 18+200) and removing many mature trees in the vicinity. The existing Gorrue Local Road is to be re-aligned over the mainline on high embankment at (Ch. 17+940) adding to the local disturbance an impact. North of Hugginstown the alignment passes through a

large area of coniferous forestry and rough pasture (Ch. 18+700 to 19+500) immediately west of a vehicle breaking operation.

Heading northwards the route again rises on to high embankment over a low-lying scrub covered area (Ch. 19+600) prior to crossing the Kilkeasy Local Road (Ch. 20+160) which in turn is re-aligned over the proposed mainline via high embankment. North of the crossing the route enters cutting passing east of Kilkeasy House (Ch. 20+500) from where it begins to descend towards and under the Coolmore Local Road (Ch. 21+350), which is re-aligned over the mainline close to existing grade. North of Coolmore, the route cuts through coniferous forestry (Ch. 21+900) and continues down slope through small fields and scrub across the Carrickshock Local Road (Ch. 22+940). From here the route rises on to high embankment over the Ballygeadra Local Road (Ch. 23+420), which is re-aligned under the mainline and from where a link is provided south to the otherwise severed Carrickshock Local Road.

North of Ballygeadra Local Road, the route passes closely between residential properties across mature tree-lines and gradually larger and occasionally arable fields. Knocktopher grade-separated junction (Knocktopher Junction at Ch. 25+200) is located over 1km west of Knocktopher and immediately south of Sheepstown Local Road (Ch. 25+250), which is re-aligned through the junction. Residential property is situated at proximity to the south-west, north-west and north-east of the junction. Continuing northwards and down slope the route passes to the immediate west of a low-lying wetland area (Ch. 26+200) at Danganbeg and crosses the Danganbeg Local Road (Ch. 26+560) approaching Knockadrina Hill.

The proposed mainline crosses the Knockadrina Local Road (Ch. 27+160) and passes immediately west of the locally prominent primarily beech woodland topped hill at Knockadrina (Ch. 27+300). The Knockadrina Local Road is re-aligned over the mainline and a link runs southwards to the otherwise severed Danganbeg Local Road. Continuing north through cutting, the route cuts through high quality arable and pastureland passing east of a residential farm property (Ch. 28+800) and passing under the Stonecarty Local Road (Ch. 29+440) close to another residential property. The existing Stonecarty Local Road is re-aligned under the proposed mainline at this point. Running through similarly good agricultural land, the route crosses the Rathduff Local Road (Ch. 31+120) west of a line of residential property and

the local road is re-aligned over the mainline on embankment. From here the mainline cuts through a local ridge (Ch. 31+360) before crossing the deep set wooded valley of Kings River (Ch. 31+560).

### **Landscape Impact**

In particular, embankments, grade-separated junctions, elevated structures and landscape intrusion are among the principal landscape impacts.

#### Embankments

While much of the route is in cutting or at grade, significant embankments are proposed along various stretches of the alignment. In addition a number of the local access roads will be re-aligned on to embankment over the proposed mainline. The most significant in landscape and visual terms are:

#### **Locally Profound negative impact**

Ch. 17+920 Gorrue Local Road. (Figure 10.8)

#### **Locally Significant Negative Impact**

Ch. 1+800 to 2+300 Crossing of the Dunkitt Local Road, existing N9 Waterford Road and Dublin to Waterford Railway. (Figure 10.4)

Ch. 18+100 to 18+900 Close to residential property east of Hugginstown/Gorrue and intrusion in remote setting. (Figure 10.8)

Ch. 23+000 to 23+700 Crossing Ballygeardra Local Road close to residential property. (Figure 10.10)

Ch. 24+600 to 25+200 Southern approach lanes to Knocktopher grade-separated Junction (Figure 10.10)

Ch. 27+160 Knockadrina Local Road. (Figure 10.11)

#### **Locally Moderate Negative Impact**

Ch. 3+100 to 3+800 Crossing of Local Road. (Figure 10.4)

Ch. 5+600 to 6+400 Crossing low-lying land east of the Dublin to Waterford Railway. (Figure 10.5)

Ch. 16+000 to Crossing of the Dublin to

16+500 Waterford Railway. (Figure 10.8)

Ch. 16+900 to 17+200 Close to property south of Hugginstown. (Figure 10.8)

Ch. 19+350 to 19+800 over low ground south of Kilkeasy Local Road. (Figure 10.9)

Ch. 20+140 Kilkeasy Local Road. (Figure 10.9)

Ch. 31+120 Rathduff Local Road. (Figure 10.12)

#### Junctions and Structures

Two grade-separated junctions are proposed at Mullinavat (Ch. 10+720) and Knocktopher (25+180) and these are potentially of particular impact being of large scale with various elevated sections and illumination all in proximity to residential property. The associated illumination and intrusion in the landscape will be especially significant, at least until landscaping has substantially established. In addition significant overbridges and underbridges are proposed at various locations including: Ballykeoghan overbridge (Ch. 5+060); Glendonnell underbridge (Ch. 9+650); Ballyquin Road underbridge (Ch. 10+120); Derrylacky River underbridge (Ch. 13+850); existing N9 underbridge (Ch. 14+400); Gorrue overbridge (Ch. 17+920); Kilkeasy overbridge (Ch. 20+140); Knockadrina overbridge (Ch. 27+160); Rathduff overbridge (Ch. 31+120) and King's River underbridge (Ch 31+560).

#### Landscape Intrusion

In landscape terms, among the principal impacting feature of the Waterford to King's River section will be the general disturbance to the often remote rural, agricultural fabric through which part of the route passes. Particularly significant landscape impact will arise at the following areas:

LC1 Ch. 5+250 to 6+750; Ballykeoghan to Rossinan - **significant** intrusion on rising slopes (Figure 10.5).

LC2 Ch. 7+350 to 8+250; Rossinan to Scart- **significant** intrusion over elevated west facing upland slopes (Figure 10.5).

LC3 Ch. 9+060 to 9+210; Deerpark- **significant** intrusion across intimate deep cut stream valley

LC4	Ch. 9+950 to 10+100;	(Figure 10.6). East of Mullinavat - <b>significant</b> intrusion on wooded deep cut Ballygreek River valley (Figure 10.6).
LC5	Ch. 11+500 to 12+800;	Ballylusky to Earlsrath - <b>profound</b> intrusion and alteration to character of secluded 'wooded' west facing landscape setting (Figure 10.6 and 10.7).
LC6	Ch. 13+730 to 13+940;	Lukeswell- <b>significant</b> intrusion across open deep cut Derrylackey River valley (Figure 10.7).
LC7	Ch. 16+980 to 18+900;	Gorrue / Hugginstown - <b>profound</b> intrusion and alteration to character of secluded 'rural and natural habitat' of landscape setting (Figure 10.8).
LC8	Ch. 19+560 to 19+800;	Kilkeasy- <b>significant</b> intrusion across open deep scrub lined stream valley (Figure 10.9).
LC9	Ch. 26+740 to 28+330;	Knockadrina - <b>profound</b> intrusion and alteration to character of secluded 'rural and distinctive' landscape valley (Figure 10.11).
LC10	Ch. 31+300 to 31+700;	Rathduff to Kellsboro <b>significant</b> intrusion and alteration to character of secluded 'rural and distinctive' landscape of King's River valley with high landscape amenity designation (Figure 10.12).

### **Impact on Trees and Woodland**

While the proposed road development has been aligned to minimise negative impact on trees and hedgerows especially significant stands of trees, some degree of impact is inevitable in such a strongly tree-lined and hedgerow dominated landscape. As such, tree removal is primarily restricted to short sections of tree-lined hedgerows and roadside plantings, which are a common feature of the landscape throughout the area.

There is no incidence of profound impact on woodlands, trees and hedgerows. However, the proposed road development will have 6

instances of locally significant impact and a series of locally moderate and locally slight impacts primarily on tree-lines and strong hedgerows along its route. The six most significant locations are at:

- T12 the crossing of the Ballygreek River, east of Mullinavat (Figure 10.6);
- T16 & T17 the parkland setting at Mount St. Joseph / Earlsrath (Figure 10.6);
- T24 & T25 on copses, avenue and linear plantings at Gorrue, Hugginstown (Figure 10.8);
- T38 on strong linear tree planting on southern slope of King's River Valley (Figure 10.12);

In overall terms the removal of trees and hedgerows constitutes a moderate negative construction impact, which will be appropriately compensated for in the proposed landscape mitigation. See relevant sections below.

### **Visual Impact**

Some 265 properties were identified along the Waterford to King's River section as having potential for some degree of visual impact. Details of impacted properties are set out in the Landscape and Visual Assessment Plans, illustrated on Figures 10.3 to 10.26 and a summary of the impacts is given in Table 10.1 and landscape Appendix 10.1.

### Construction Stage

Of the 265 locations identified, some 42 properties will have an imperceptible visual impact even during the initial temporary construction stage. Some 67 properties will have slight negative visual impact and a further 67 properties will experience moderate negative visual impact. The remaining 89 properties will have varying degrees of substantial negative visual impacts, with 50 properties having significant impact and 39 properties having a profound level of negative impact during the temporary construction stage. Details of all the impacted properties are set out in the Landscape Appendix 10.1.

### Pre-establishment Stage

On completion of construction works the associated short-term disturbance will be removed as an impacting factor. Of the 265 locations identified, some 67 properties will have an imperceptible visual impact at opening stage. Some 61 properties will have slight negative visual impact and a further 60 properties will experience moderate negative visual impact.

The remaining 77 properties will have varying degrees of substantial negative visual impacts, with 45 properties having significant impact and 32 properties having a profound level of negative impact. Details of all the impacted properties are set out in the Landscape Appendix 10.1.

#### Post-establishment Stage

As planting establishes along the proposed road development the severity and prominence of visual intrusion will be mitigated especially where the scheme is at distance from impacted properties or where such properties are already similarly impacted by the existing infrastructure. Of the 265 locations, 145 properties will have imperceptible impact in the post-establishment stage. A further 70 properties will have slight negative impact and 27 properties will have moderate levels of negative visual impact.

However, 23 properties will continue to have significant (16) or profound (7) negative visual impact after the pre-establishment stage. The significantly impacted locations are Property Nos. 93; 94; 100; 102; 123; 124; 135; 153; 158; 163; 177; 207; 229; 231; 239 & 255. The seven profoundly impacted properties are:

- **15;** (Ch. 2+150) Bungalow immediately adjacent to east side of existing N9. Currently subject to negative visual impact from existing road and railway to rear. Proposed mainline passes to north-east at 50m to centre-line on substantial embankment at the N9/ rail underbridge. Profound construction and pre-establishment impact. See Figure 10.4.
- **134;** (Ch. 10+680) Bungalow on south side of R704 on west facing flank of rising hillside. Elevated position overlooking Mullinavat. Tree-less field boundaries in the locality. Proposed mainline at 100 metres cutting as part of Mullinavat Junction. Profound construction and pre-establishment impact. See Figure 10.6.
- **152;** (Ch 11+650) Mount St. Joseph's Ballylusky, a converted convent building with mature trees surrounding but with elevated open views west across the upper Blackwater River valley. Proposed mainline passes immediately west down slope and in cutting but at only 100m to centre-line. Substantial visual disturbance and intrusion on secluded parkland setting and vista. Profound construction and pre-establishment impact. See Figure 10.6.
- **169;** (Ch. 17+060) House with limited tree screen in secluded setting. Proposed

mainline is 90 metres from centre line on low embankment. Very substantial visual disturbance and intrusion. Profound construction and pre-establishment impact. See Figure 10.8.

- **171;** (Ch. 18+180) House set on top of cutting with views overlooking the valley to Hugginstown Fen and picturesque rural setting. Proposed mainline is 40 metres from centre line slightly below grade. Very substantial visual disturbance and intrusion. Profound construction and pre-establishment impact. See figure 10.8.
- **205;** (Ch. 23+450) Bungalow adjacent to minor road. Proposed mainline passes at 75 metres to centre line at east on embankment and 20 metres to side road alignment. Substantial visual obstruction and intrusion. Profound construction and pre-establishment impact. See Figure 10.10.
- **206;** (Ch. 24+440) Bungalow located on minor road. Proposed mainline passes at 30 metres to centre line to west and only 5 metres from outer line of embankment slope. Proposed mainline will be a very substantial visual obstruction and intrusion and impact property boundaries. Profound construction and pre-establishment impact. See Figure 10.10.

The proposed development will have a positive impact in terms of reduced traffic and improved residential amenity for the many properties sited close to the existing N9 Waterford Road, and particularly for those properties within the larger settlements of Mullinavat, and Knocktopher and to a lesser degree the smaller settlements of Lukeswell; and Ballyhale.

#### ***Impact on Landscape Planning***

This section of the route has landscape planning impacts associated with Hugginstown Fen and the crossing of the King's River. While the route avoids direct impact on the fen, the impact on the adjoining and associated landscape east of the wetland is profound. The route cuts through the mature planted landscape surrounding an isolated farmhouse which views west towards the fen resulting in significant disturbance, intrusion and alteration of the existing character.

At the King's River the route crosses an Area of High Amenity (No. 13) and an associated listed View (No. 20). The crossing is at one of the narrowest points of the linear designation, which runs along the King's River. The proposed long-span bridging of the river valley will minimise landscape and visual disturbance maintaining

the integrity of the valley. The impact on the designated landscape is considered to be moderate during the short-term construction and slight thereafter.

The proposed route crosses the 'South Leinster Way' near Mullinavat. However the walk follows a local road in this area, which will be retained in open access. The proposed road has no significant impact on other landscape planning aspects.

### 10.4.3 King's River to Ballyquirke

#### ***Scheme Description***

The proposed alignment leads north from the King's River over the Kellsboro Local Road (Ch. 31+700) across gently rising open large agricultural farmland through Kellsgrange before rising onto embankment to cross the Ennisnag Stream valley (Ch.34+080). Continuing north the route enters deep cutting, passes west of an obelisk sitting prominently on a low rounded hill at Danesfort (Ch. 34+740), before eventually cutting through the existing N10 Kilkenny Waterford Road (35+200) also at Danesfort. The Danesfort grade-separated junction (Danesfort Junction at 35+280) is proposed immediately north of the existing N10 and over 1.6km of the existing N10 road is re-aligned through the junction.

North of Danesfort Junction, the route turns north-easterly continuing across open land to cross Croan Local Road (Ch. 36+260) from where it moves into similarly good but more enclosed agricultural land. The alignment crosses Rathclough Local Road (Ch. 37+120) on high embankment and continues to cross the R700 Bennettsbridge Road (Ch. 39+340) also on high embankment. Moving towards the River Nore the alignment passes to the south-east of a large gravel quarry (Ch. 39+800) before crossing the wide valley of the river (Ch. 40+000). Continuing on high embankment the alignment crosses over the Dublin to Waterford Railway (Ch. 40+280) and the nearby Dunbell Big Local Road (Ch. 40+460) close to residential properties.

Turning northwards again, the route traverses large open arable landscape at grade; crosses the vegetated valley of the Holdenstown Stream, and as it moves into cutting removes a residential property no. 383 (Ch. 42+820). Continuing more north-easterly, the alignment cuts through the Holdenstown Local Road (Ch. 43+200), passes south-east of Roughfield House and rises onto high embankment over low ground to re-cross the Dublin to Waterford

Railway (Ch. 44+430) approaching the proposed Dunbell grade-separated junction (Dunbell Junction at Ch. 44+580) located in a large-scale open arable landscape.

Turning more easterly, the route passes into the Rathcash/Blanchville Demesne area and passes immediately north of a copse of deciduous trees located on Blanchville Stream (Ch. 45+750) prior to passing south of a second smaller copse (Ch. 46+200). The alignment crosses the Rathcash Local Road (Ch. 46+720) again close to residential property before swinging round to the north-east to cross the R702 Talbotshill Road (Ch. 47+300). Continuing north-east the route rises onto high embankment and passes close to residential property as it crosses over the existing N10 Kilkenny Road (Ch. 48+060). On either side of the N10, the landscape is of more small-scale nature in pasture use with strong tree-lined hedgerows. The route cuts through many of the strong tree-lined hedgerows prior to cutting through the Blanchvillespark Local Access (Ch. 48+860) and the Ballyquirke Local Roads (Ch. 49+180).

#### **Kilkenny Link Road**

As part of the development it is proposed to construct a link road from the proposed mainline at Dunbell to the eastern fringe of Kilkenny City at Blanchville Island.

Commencing in a series of roundabouts on the Blanchville Island Local Road, the link road runs east across strong tree-lined roadside hedgerows, eventually heading south of the local road through Archersrath. Passing south of residential development and a nursing home (Ch. 2+000), the route turns south-east traversing the strongly 'tree-ed' landscape north of Lyrath Estate (Ch. 3+000 to 4+400). The route moves into deep cutting approaching and crossing the Templemartin Local Road (Ch. 4+520) close to residential property. The alignment swings slightly eastwards and then back south-east rising onto high embankment passing an ESB Sub-station (Ch. 5+400) to eventually cross the existing N10 Kilkenny Road (Ch. 5+520). Turning back more easterly and returning to grade, the route crosses the open large-scale arable landscape south of Rathgarvan House and Castle (Ch. 6+700) before rising to tie-into the proposed Dunbell Junction on the mainline (Ch. 7+300).

#### ***Landscape Impact***

In particular, embankments, grade-separated junctions, elevated structures and landscape

intrusion are among the principal landscape impacts.

### Embankments

While much of the route is in cutting or at grade, significant embankments are proposed along various stretches of the alignment. In addition a number of the local access roads will be re-aligned on to embankment over the proposed mainline. The most significant in landscape and visual terms are:

#### **Locally Profound Negative Impact**

Ch. 47+700 Crossing existing N10 to 48+600 Kilkenny Road at Blanchvillespark close to residential properties (Figure 10.18).

#### **Locally Significant Negative Impact**

Ch. 34+000 Crossing of the Ennisnag Stream (Figure 10.13).

Ch. 36+700 Crossing Rathclough Local Road close to residential properties (Figure 10.14).

Ch. 39+800 Crossing of the River Nore, Dublin to Waterford Railway and Dunbell Big Local road close to residential properties (Figure 10.15).

Ch. 43+800 Crossing low ground and to 44+600 the Dublin to Waterford Railway at Roughfield (Figure 10.16).

#### **Locally Moderate Negative Impact**

Ch. 38+900 Crossing of the R700 to 39+600 Kilree Road (Figure 10.14).

Ch. 5+200 Kilkenny Link Road to 5+800 crossing existing N10 Kilkenny Road between Templemartin and Rathgarvan (Figure 10.26).

### Junctions and Structures

Two grade-separated junctions are proposed at Danesfort (at Ch. 35+300) and Dunbell (at 44+580) and these are potentially of particular

impact being of large scale with various elevated sections and illumination all in proximity to residential property. The associated illumination and intrusion in the landscape will be especially significant, at least until landscaping has substantially established. In addition significant overbridges and underbridges are proposed at various locations including: the King's River underbridge (Ch 31+560); the Ennisnag Stream underbridge (Ch. 34+080); Croan overbridge (Ch. 36+240); River Nore underbridge (Ch. 40+000); Rathcash overbridge (Ch. 46+620); R702 Talbotshill overbridge (Ch. 47+340); existing N10 underbridge (Ch. 48+060); Ballyquirke overbridge (Ch. 49+180) and the roundabout and link roads at Blanchvillespark (Ch. 1+200) on the Kilkenny Link Road.

### Landscape Intrusion

In landscape terms, among the principal impacting feature of the Waterford to King's River section will be the general disturbance to the high quality agricultural fabric through which all of this section of the route passes. Particularly significant landscape impact will arise at the following areas: -

LC10	Ch. 31+300 to 31+750;	Rathduff to Kellsboro - <b>significant</b> intrusion and alteration to character of secluded 'rural and distinctive' landscape of King's River valley with high landscape amenity designation. (Figure 10.12)
LC11	Ch. 34+000 to 34+250;	South of Danesfort - <b>significant</b> intrusion on wooded deep cut valley of Ennisnag Stream (Figure 10.13)
LC12	Ch. 39+680 to 40+230;	Bennettsbridge - <b>significant</b> intrusion and alteration to riparian character and landscape of River Nore valley. (Figure 10.15).
LC13	Ch. 44+200 to 46+200;	Dunbell / Rathcash / Rathgarvan - <b>significant</b> intrusion and alteration to character of large-scale open high quality arable landscape. (Figure 10.16)
LC14	Ch. 3+050 to 4+170;	Lyrath - <b>significant</b> intrusion and alteration to quality parkland landscape character north of Lyrath Estate. (Figures 10.25 and 10.26).

### **Impact on Trees and Woodland**

While the proposed road development has been aligned to minimise negative impact on trees and hedgerows especially significant stands of trees, some degree of impact is inevitable in such a strongly tree-lined and hedgerow landscape. As such, tree removal is primarily restricted to short sections of tree-lined hedgerows and roadside plantings, which are a common feature of the landscape throughout the area.

There is no incidence of profound impact on woodlands, trees and hedgerows. However, the proposed road development will have 5 instances of locally significant impact and a series of locally moderate and locally slight impacts primarily on tree-lines and strong hedgerows along its route, See T37 to T63. The five most significant impacts arise at:

- T44 on strong linear tree plantings on both sides of River Nore Valley, north of Bennettsbridge; (Figure 10.15).
- T54, T55 & T56 parkland trees, mature tree-lined hedgerows and small copses at Lyrath and Templemartin setting at Mount St. Joseph / Earlsrath; (Figures 10.25 and 10.26).
- T62 on strong hedgerows with many mature trees at Blanchvillespark north of the Existing N10; (Figure 10.18).

In overall terms the removal of trees and hedgerows constitutes a slight negative construction impact, which will be appropriately compensated for in the proposed landscape mitigation. See relevant sections below.

### **Visual Impact**

Some 220 properties were identified along the King's River to Ballyquirke section as having potential for some degree of visual impact. Details of impacted properties are set out in the Landscape and Visual Assessment Plans, illustrated on Figures 10.3 to 10.26 and a summary of the impacts is given in Table 10.2 and in Landscape Appendix 10.1.

#### Construction Stage

Of the 220 locations identified, 1 property (No. 383) will be acquired in the construction of the road development. Some 41 properties will have an imperceptible visual impact even during the initial temporary construction stage. Some 69 properties will have slight negative visual impact and a further 50 properties will experience moderate negative visual impact. The remaining 59 properties will have varying degrees of

substantial negative visual impacts, with 28 properties having significant impact and 31 properties having a profound level of negative impact during the temporary construction stage. Details of all the impacted properties are set out in Landscape Appendix 10.1.

#### Pre-establishment Stage

On completion of construction works the associated short-term disturbance will be removed as an impacting factor. Some 52 properties will have an imperceptible visual impact at opening stage. A further 87 properties will have slight negative visual impact and 30 properties will experience moderate negative visual impact. The remaining 50 properties will have varying degrees of substantial negative visual impacts, with 31 having significant impact and 19 having a profound level of negative impact. Details of all the impacted properties are set out in the Landscape Appendix 10.1.

#### Post-establishment Stage

As planting establishes along the proposed road development the severity and prominence of visual intrusion will also be mitigated especially where the scheme is at distance from impacted properties or where such properties are already similarly impacted by the existing infrastructure. Of the 219 locations, 133 properties will have imperceptible impact in the post-establishment stage. A further 50 properties will have slight negative impact and 24 properties will have moderate levels of negative visual impact.

However, 12 properties will continue to have significant (10 properties) or profound (2 properties) negative visual impact after the pre-establishment stage. These twelve significantly impacted locations are Property Nos. 293; 313; 348a; 360; 394a; 398; 404; 419; 442a and 457. The profoundly impacted properties are:

- **348**; (Ch 39+400) Bungalow off Kilkenny-Bennettsbridge Road. Proposed mainline passes immediately north-west at only 70m to centre-line of elevated carriageway. Very substantial visual disturbance and intrusion. See Figure 10.15.
- **394**; (Ch 44+100) Roughfield, House with open aspect to road. Proposed mainline passes to south at less than 100m to elevated carriageway. Visual Intrusion and obstruction. See Figure 10.16.

The proposed development will have a positive impact in terms of reduced traffic and improved residential amenity for those many properties particularly sited close to the existing N9

Waterford Road and the N10 Kilkenny and N10 Waterford Roads, as well as for those properties within the settlements of Stoneyford, Danesfort Cross; Clifden; Gowran and Dungarvan.

In crossing the River Nore Valley at elevation, the proposed road development will be visible from the elevated north-western edge of Bennettsbridge. However, the proposed road will not be especially visible or detracting from the town itself, or from the existing River Nore Bridge leading into the town. The proposed crossing point is at substantial distance and the valley is generally wide and relatively flat with a network of intervening tree planting and hedgerows both in field boundaries and along the river channel. As such, while the proposed road and more especially its associated traffic will be visible from the edge of the town it is considered that given the distance and presence of intervening vegetation, the overall visual impact on the town is not adversely significant.

#### ***Impact on Landscape Planning***

This section of the route has limited landscape planning impact associated with the crossing of the King's River as described for the previous Waterford to King's River section. At the King's River the route crosses an Area of High Amenity (No. 13) and an associated listed View (No. 20). However, the crossing is at one of the narrowest points of the linear designation, which runs along the King's River and the proposed long-span bridging of the river valley will minimise landscape and visual disturbance and maintain the integrity of the valley. The impact on the designated landscape is considered to be moderate during the short-term construction and slight thereafter.

#### **10.4.4 Ballyquirke to Powerstown**

##### ***Scheme Description***

The route description commences at Ballyquirke (Ch.60+000) where the alignment continues from cutting on the previous section and deepens as it moves northward. (Ch.60+250) before continuing to (Ch. 60+700). After a short embankment, the route continues in a series of cuttings at the edge of higher land, which rises steeply to the Castlecomer Plateau to the west. The Ballyquirke Local Road (L6676 at Ch. 67+760) has the realigned minor road passing at grade over the mainline, which is in cutting. Emerging from cutting (Ch.62+150), the route runs on continuous embankment of varying height until (Ch.63+900) the approach to Jordanstown overbridge (Jordanstown Junction at Ch.64+460). The main route enters a slight

cutting through the interchange, with the slip roads consequently on slight embankments on all sides. The Kellymount Local Road, which runs north to Killcarrig Quarry and south to link the N10 and N9 crosses the mainline at grade (Ch.64+850).

North of the Jordanstown Junction, the route rises onto slight embankment (Ch. 65+000 - 66+500) before crossing the local road (L6673), which is closed. The main route which is in slight cutting is crossed by the Lower Shankill overbridge at (Ch. 66+760). A local road link from the west side of the route runs south and then west to reconnect with the truncated L6673. The next local road (L5023) crossing also requires an overbridge at Moanmore road (Ch.67.735) where the mainline runs at grade. The route then enters a shallow cutting from Ch 67+800 to 68+400. There follows a series of local road realignments (L7118 and L7119), which when associated with the realigned (L1006) via the Closutton road overbridge (Ch. 69+131) re-establishes the local road network.

Running at grade as far as Ch.70+500, the route rises onto a short, embankment for some 700 metres before dropping back to grade. At this chainage (Ch71+200), the local, currently tree-lined road (L1005) crosses the main route on embankment via the Ballynolan road overbridge. A series of very minor cuttings and embankments follow as the route crosses a relatively level open landscape. In this section, a local road (L5009) crosses the main route on embankment via the Seskin road overbridge at (Ch. 72+439)

The route runs through minor cuttings to (Ch. 73+500), then onto a relatively insignificant embankment as far as the Tomard stream (Ch. 74+500). The main-line enters slight cutting and a local road (L1000) crosses on embankment via the Tomard Lower overbridge (Ch 75+000). The route then approaches the west bank of the river Barrow and breaks through the narrow fringe of woodland, bridges the river, and continues on a short length (300 metres) of significant height embankment before entering cutting to join the Powerstown Interchange (Ch. 76+500). A short section of the tip of the riverside woodland on the east bank will also be lost due to the main route alignment.

##### ***Landscape Impact***

In particular, embankments, grade-separated junctions, elevated structures and landscape intrusion are among the principal landscape impacts.

### Embankments

While much of the route is in cutting or at grade, significant embankments are proposed along various stretches of the alignment. In addition, a number of local access roads will be re-aligned on to embankment over the proposed mainline and these are described in the following section. Mainline significant impacts in landscape and visual terms are:

#### **Locally Profound Negative Impact**

None

#### **Locally Significant Negative Impact**

Ch.62+350 to 63+350 Crossing the Monefelim and Ballyvalden rivers and proximity to relatively remote residences, together with loss of well developed trees in field boundaries. Disruption of field pattern (Figure 10.19).

Ch.75+600 to 75+900 Embankment on east bank and flood-plain of the river Barrow (Figure 10.24).

#### **Locally Moderate Negative Impact**

Ch.70+600 to 71+100 Embankment crossing the Madlin River. Topographic intrusion. Relatively minor tree loss in boundary hedgerows (Figure 10.22).

### Junctions and Structures

The principal structure in this section is the bridge crossing of the river Barrow (Ch 75+500 to 75+900), which will be a significant element within this visually confined section of valley.

Grade-separated junctions are proposed at Jordanstown (at Ch. 64+460) and Powerstown (at Ch. 76+500).

At Jordanstown the mainline is in moderate cutting at this location, therefore slip roads on both the northwest and southeast sides do not require large scale embankments. Also, the field within which the majority of the interchange is located has effective tree screening, as does the railway line which therefore provides good initial screening from the south and east. The nearest properties are in excess of 300 metres away from the interchange roundabouts (the highest

elements), but illumination will cause adverse impacts, although decreasing, as planting in the extensive areas available for woodland creation increase in maturity.

The Powerstown Interchange is located at a low point at the crossing of the existing N9/N10 Road close to residential development.

There are two underbridges planned, one at Monefelim (Ch. 62+790) and the other at Ballyvalden (Ch.63+015). There are also the Monefelim and Ballyvalden river bridges.

Overbridges occur at several locations as follows: Ballyquirke North (Ch 61+760) – Local road at grade over main-line in cutting no earthworks of significance. Kellymount Road (Ch 64+850) – minor embankment works both sides over mainline in slight cutting. Lower Shankill (Ch. 66+760) – moderate a embankments both sides over mainline in very slight cutting. Moanmore (Ch. 67+735) – significant embankments on both sides of mainline which is at grade. Closutton (Ch. 69+131) – moderate embankments on both sides of mainline, which is at, grade. Ballynolan road (Ch.71+210) – moderate embankment on west side; slight embankment on east side over mainline at grade. Seskin road (CH. 72+439) – Moderate embankments both sides of mainline which is in very slight cutting. Tomard Lower (Ch. 74+994) – Moderate embankment north side and slight embankment south side over mainline in slight cutting.

### Landscape Intrusion

In general terms, the principal impacting feature within the Ballyquirke to Powerstown road development section will be the general disturbance to the agricultural fabric through which the route passes. However, impacts on landscape character specifically arise at the following areas:

LC15	River Barrow crossing Ch.75+500 to 75+900	Embankment on east side of flood plain and loss of 50m woodland on east bank together with loss of woodland continuity on west bank will cause <b>locally significant &amp; regionally slight</b> intrusion and alteration to character (Figure 10.24).
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### **Impact on Trees and Woodlands**

The proposed road development has a limited negative impact on trees and hedgerows. There

are no Profound impacts on trees, and locally significant impacts are limited to the crossing of the L1005 Ballynolan Road and to the continuity of woodland on either side of the river Barrow crossing, see T70 and T72 respectively.

In overall terms the removal of trees and hedgerows constitutes only a moderate to slight negative construction impact, which will be appropriately compensated for in the proposed landscape mitigation. See Sections 10.5 below.

### **Visual Impact**

Some 137no properties were identified along the Ballyquirke to Powerstown section as having potential for some degree of visual impact. Details of impacted properties are set out in the Landscape and Visual Assessment Plans, illustrated on Figures 10.3 to 10.26 and a summary of the impacts is given in Table 10.3 and Landscape Appendix 10.1.

#### Construction Stage

Of the 140 locations identified, 3 properties (Nos. 498, 589 & 599) will be acquired in the construction of the road development. Some 13 properties will have an imperceptible visual impact even during the initial temporary construction stage. Some 62 properties will have slight negative visual impact and a further 27 properties will experience moderate negative visual impact. The remaining 35 properties will have varying degrees of substantial negative visual impacts, with 21 properties having significant impact and 14 properties having a profound level of negative impact during the temporary construction stage. Details of all the impacted properties are set out in the Landscape Appendix 10.1.

#### Pre-establishment Stage

On completion of construction works the associated short-term disturbance will be removed as an impacting factor. Some 30 properties will have an imperceptible visual impact at opening stage. A further 58 properties will have slight negative visual impact and 23 properties will experience moderate negative visual impact. The remaining 26 properties will have varying degrees of substantial negative visual impacts, with 19 having significant impact and 7 having a profound level of negative impact. Details of all the impacted properties are set out in the Landscape Appendix 10.1.

#### Post-establishment Stage

As planting establishes along the proposed road development the severity and prominence of visual intrusion will also be mitigated especially

where the scheme is at distance from impacted properties or where such properties are already similarly impacted by the existing infrastructure. Of the 137 locations, 84 properties will have imperceptible impact in the post-establishment stage. A further 33 properties will have slight negative impact and 16 properties will have moderate levels of negative visual impact. However, 3 properties will continue to have significant (2 properties) or profound (1 property) negative visual impact after the pre-establishment stage. The two significantly impacted locations are Property Nos. 485 and 566. The profoundly impacted property is:

- **583:** (Ch.74+720) House located on north side of private driveway to the west of local road (L1000). Centre of mainline in dip of field at 50m is at grade rising onto slight embankment to the north.

### **Impact on Landscape Planning**

As with previous sections in landscape terms, the principal impacting feature of the Ballyquirke to Powerstown section will be the general disturbance to the high quality rural, agricultural fabric through which the route.

A listed 'View and Prospect' runs southeast from Tomard Upper to Tomard Lower on the west bank of the Barrow. (View No. A2 –Views of Barrow Valley, Mount Leinster, Brandon Hill and Backstairs from area of Coolnakisha, Tomard Upper and Tomard Lower.) In this vicinity, the proposed route crosses the middle-ground of an expansive and panoramic view on the east side of the River Barrow valley beyond and south of Milford. The construction stage will result in some degree of visual disturbance and intrusion. However, at this distance and in the context of the nature and scale of the view, the impact is considered of slight to moderate significance. The development will be increasingly and effectively screened with the establishment of proposed landscaping, and the post establishment stage will not have any significant impact.

The development will have no appreciable impact on other 'Views and Prospects' in the area including A9, A11 & A13.

## **10.5 Remedial or Reductive Measures**

### **10.5.1 General**

Consideration was given to avoidance of impact wherever possible during the route selection and design process for the proposed road development. This attempt at avoidance

commenced at an early stage with the preparation of a landscape and visual constraints assessment of a wide study area as part of the overall Constraints Study for the project. On assimilation of the various constraints studies, a number of potential routes were developed in compliance with the scheme objectives. In developing the various route options the avoidance of identified constraints was a significant element of the consideration process. Subsequently all of the routes were assessed and compared in the course of the Route Selection Report during which the likely impacts of all of route options were highlighted and a best option in landscape and visual terms identified. While all of the options have potential for landscape and visual impact the recommended option was considered to have the least overall potential for significant adverse landscape and visual impact.

As such, in this respect the alignment has already been selected to minimise impact on residential property, topographical features, trees and woodland wherever possible. However, as with any development some degree of impact is inevitable and wherever possible measures have been proposed to mitigate the negative nature of these impacts and the various specific measures are listed in detail on a section-by-section basis.

### **Construction Stage**

During the construction stage, contracts will be framed to ensure good working practices so as to minimise any negative impacts arising from construction and to ensure that site machinery operates within the scheme construction area. Storage areas will be located so as to avoid impacting further on existing residential properties, trees, hedgerows, drainage patterns etc. All such areas will be fully re-instated prior to or at the end of the construction contract. The works will also have continuous monitoring so as to ensure adequate protection of areas outside of the construction works.

On completion of sections of the proposed road development, side slopes including cuttings and embankments, verges and other soft areas will be prepared for soiling, and either seeded or planted as set out in the Outline Landscape Proposals.

### **Lighting Mitigation**

For the purposes of mitigation fully horizontal cut-off light fittings will be used which in combination with the extensive landscaping proposed, will ensure that in general light spill effect will be maintained within the road corridor.

## **10.5.2 Outline Landscape Proposals**

### **Landscape Strategy**

The proposed road development crosses a primarily rural and agricultural landscape with a dispersed nature of residential development. As such an approach, which aims to protect the rural and residential amenity and enhance the rural edge of the roadside landscape, is proposed.

The objectives for the landscape works to the proposed scheme are:

- To develop a landscape strategy, the character of which relates to the patterns, scale and diversity of the existing character of the study area;
- To develop a landscape structure which assists to physically and visually integrate the proposed road development, its embankments and associated features into the local surroundings;
- To minimise visual intrusion and reduce the negative nature of any visual obstruction;
- To protect, reinstate or enhance elements of the existing landscape, directly or indirectly affected by proposal;
- To assist in the creation of pleasant safe driving conditions, and
- To maximise attractive views from the proposed road development, where there is no conflict with screening visual impact from properties.
- Landscape mitigation will entail general landscape measures, which may be applied over the road development as a whole together with other more specific landscape proposals at certain locations, which are discussed in a section-by-section basis.

### 10.5.3 General Landscape Mitigation Measures

#### *Introduction*

In order to soften the impact of the road development on the landscape, certain areas adjacent to strong mature tree-lines or tree-lined hedgerows, are proposed for planting in order to break up linearity, for habitat protection and enhancement, for local landscape integration and screening. This is particularly significant in the strongly tree-lined hedgerow landscape of south Kilkenny below King's River.

General measures will be applied over the entire road development, depending on the nature of the particular road section, ensuring that field boundaries are re-connected with hedgerows. This approach will be locally modified to incorporate other landscape treatments, which may negate the requirement for the hedgerow, e.g. extensive woodland planting or where it is considered to have appropriately located open sections of carriageway. Open sections will allow for views to the wider landscape only where they do not impinge on residential or other amenity. Proposals will ensure planting is distributed along the entire scheme and the associated county road re-alignments and will vary from typically rural tree-lined hedgerow reinstatement to the establishment of extensive areas of new woodland as screening and integration for the development.

Treatments will take into consideration the assessment and recommendations of the Terrestrial Ecology (Chapter 11) and Aquatic Ecology and Hydrology (Chapter 12) in this EIS and will ensure that in the general scenario, species which are locally indigenous and native are used in the proposed plantings. However, proposals in terms of their nature and approach will consider the locally impacted environment, in terms of species, e.g. beech planting at old demesnes, and a more ornamental approach where garden plantings are disturbed.

#### *Areas in Cut and on Fill*

A grass or meadow sward will generally be established over the entire slope except in areas of cutting through stable rock, which will be left exposed for natural colonisation as a local landscape feature. In addition, planting at sensitive locations particularly close to residential and recreational amenities will be used to reduce the visual intrusion and mitigate against visual obstruction caused by the raising of the scheme on to embankments, especially at junctions. Shrub planting will be used at the edge of the plantings to increase density and

diversity and to improve the biodiversity structure of the plantings. It is not proposed to plant either cut or fill slopes in their entirety, but to encourage a more naturalistic and locally sympathetic grouping of plantings in a natural grass sward. Embankments in proximity to residential and other property will be strongly planted so as to reduce visual intrusion of the elevated road and traffic.

#### *Areas at Grade*

Proposed planting will ameliorate the negative impacts of vehicles, and the visual expanse of the proposed road development. Boundary delineation will be augmented by means of hedgerow plantings irregularly interspersed with tree plantings where such proposals will assist with ecological connectivity and with integration in the surrounding landscape fabric.

#### *Other Areas*

Along the length of the proposed road development, landscape areas within junctions and small areas of severed fields, lots or other property acquired for the construction of the proposed scheme will be varyingly treated including planted in copse like fashion with native or semi-native woodland species, which will enhance the local landscape fabric. Such woodland blocks dispersed along the proposed scheme will assist in the improvement of the longer term visual character of the proposed scheme and local surrounds. Specific details of these specific measures are included in the detail descriptions set out below.

Certain areas along the length of the road development have been set aside for drainage requirements / pollution control / attenuation. Where such works are of a linear nature, disturbed sections of hedgerow will be replanted to match the existing. Where such works acquire larger plots these will be varyingly treated as 'wetland habitat areas' with appropriate planting and landscaping.

In specific locations barriers will be provided to reduce the impact of noise. Such barriers will also have the effect of providing visual screening from properties and will wherever possible be integrated within the proposed landscaping. Chapter 8 of this EIS outlines the assessment of noise and the requirements for mitigation. The noise mitigation measures are provided as fencing, bunding or a combination of the two. The noise mitigation measures are shown on Figures 4.52 to 4.98, the mainline plans and profiles.

#### 10.5.4 Specific Landscape Mitigation Measures

Where specific measures relate to screening for mitigation of visual impact, landscape works will generally entail dense planting as noted. Otherwise where specific measures relate to mitigation of landscape impact, landscape works will generally comprise a diversity of approach. Therefore, while some planting will be included, treatments will also include for open areas, meadows and other diverse landscape treatments.

##### ***Waterford to King's River***

Specific landscape proposals are set out in detail in Table 10.5. Where such specific measures are located outside of the lands required for the construction of the road, these will be planted at the earliest opportunity so as to provide for the quickest possible establishment of such planting and to increase mitigation potential. Requirements for additional land for planting must take account of possible demands for fencing, drainage etc.

##### ***King's River to Ballyquirke***

Specific landscape proposals are set out in detail in Table 10.6. Where such specific measures are located outside of the lands required for the construction of the road, these will be planted at the earliest opportunity so as to provide for the quickest possible establishment of such planting and to increase mitigation potential.

##### ***Ballyquirke to Powerstown***

Specific landscape proposals are set out in detail in Table 10.7 below. Where such specific measures are located outside of the lands required for the construction of the road, these will be planted at the earliest opportunity so as to provide for the quickest possible establishment of such planting and to increase mitigation potential.

##### ***Planting Specification***

The proposed planting will generally be established with forestry planting techniques, i.e.. 'bare root transplants', 'whips' and 'feathered trees' which adapt readily to disturbed ground conditions. A proportion of 'Standard' and taller size trees will be used to supplement these plantings especially in the vicinity of residential areas. All planting mixes will take cognisance of, and include native and local species as identified in the Terrestrial Ecology (Chapter 11) and Aquatic Ecology and Hydrology (Chapter 12) sections of this EIS.

Tree species utilised will be selected from a list of primarily native, naturalised and indigenous species (except where the proposal is contiguous with existing plantations containing other species such as conifers or beech etc.), which will include alder, common ash, aspen, downy and silver birch, bird and wild cherry, mountain ash, pedunculate and sessile oaks, Scots pine, and willow species. Planting sizes will be from 750mm, to 4.0m high and planted at average 2.0m centres.

Shrub planting species utilised will be selected from a list of primarily native and indigenous species, which will include, blackthorn, crab apple, elder, hawthorn, hazel, holly, guelder rose, spindle, willows and other plants found naturalised in the affected localities.

Hedge planting will be primarily of blackthorn, elder, hawthorn with hazel and other species planted at 750 - 900mm heights at 500mm centres and interspersed with taller random planted tree species such as common ash and oak.

Grass seeding areas to be topsoiled and seeded either with a low maintenance grass sward or a naturalising meadow style mix.

#### 10.6 References

Together with various amenity and landscape publications and information relating to the local and regional environment, information, the following lists the main texts reviewed in the course of the study:

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**Table 10.1 Waterford to King's River Visual Impact Summary Table**

Summary of Impacts	Construction	Pre-establishment	Post-establishment
Profound	39	32	7
Significant	50	45	16
Moderate	67	60	27
Slight	67	61	70
Imperceptible	42	67	145
Acquired or Demolished	-	-	-
<b>Totals</b>	265	265	265

**Table 10.2 Kings River to Ballyquirke Visual Impact Summary Table**

Summary of Impacts	Construction	Pre-establishment	Post-establishment
Profound	31	19	2
Significant	28	31	10
Moderate	50	30	24
Slight	69	87	50
Imperceptible	41	52	133
Acquired or Demolished	1	-	-
<b>Totals</b>	220	219	219

**Table 10.3 Ballyquirke to Powerstown Visual Impact Summary Table.**

Summary of Impacts	Construction	Pre-establishment	Post-establishment
Profound	14	7	1
Significant	21	19	3
Moderate	27	23	16
Slight	62	58	33
Imperceptible	13	30	84
Acquired or Demolished	3	-	-
<b>Totals</b>	140	137	137

**Table 10.4 Waterford to Powerstown Overall Visual Impact Summary Table**

Summary of Impacts	Construction	Pre-establishment	Post-establishment
Profound	84	58	10
Significant	99	95	29
Moderate	144	113	67
Slight	198	206	153
Imperceptible	96	149	362
Acquired or Demolished	4	-	-
<b>Totals</b>	<b>625</b>	<b>621</b>	<b>621</b>

**Table 10.5 Outline of Specific Mitigation Measures - Waterford to King's River**

Ref	Location	Description
<b>LM1</b>	Dunkitt, west of mainline Ch. 1+700 to 1+840	Additional screen planting to enhance mitigation effect of retained hedgerow for property no. 9.
<b>LM2</b>	Dunkitt East of mainline; Ch. 1+700 to 1+960	Minimum additional 10m wide area for advance landscaping off toe of embankment for property nos. 11 to 13.
<b>LM3</b>	Dunkitt, both sides of route Ch. 1+940 to 1+960	Strong planting to embankments as screening for properties nos. 11 to 16.
<b>LM4</b>	Dunkitt, west of mainline triangle of land Ch. 2+180 to 2+220	Retain existing rail-side hedgerow and augment as screening to property nos. 15 and 16.
<b>LM5</b>	Ballinacurragh. Side road link to local road opposite to Ch. 2+880.	Avoid impact on entrance and mature tree-lined avenue accessing property no. 22.
<b>LM6</b>	Blossomhill, Newtown, Ballinacurragh and Ballynamorahan. Both sides of streamline, which has mature tree cover over a length exceeding 2.5kms.	Drainage works to be concentrated on south side primarily where strongly vegetated hedgerow is less dense. Avoid tree loss by all feasible means and protect during works.
<b>LM7</b>	Ballynamorahan, west side of mainline Ch. 2+960 to 4+150.	Minimum 10 metre width of screen planting including significant tree numbers in addition to shrub planting on embankment as screening for property nos. 23 to 34.
<b>LM8</b>	Ballynamorahan, east side of mainline Ch. 3+330 to 3+430.	Planting of remnant area between toe of embankment and realigned side road link.
<b>LM9</b>	Ballynamorahan, eastside of mainline Ch. 3+750 to 3+840.	Create copse woodland which in association with LM10 provides screening of embankment for property nos. 35 and 36.
<b>LM10</b>	Ballynamorahan, east side of mainline Ch. 3+730 to 3+980.	Provide for integration of proposed attenuation pond within landscape/screening for property nos. 35 and 36.
<b>LM11</b>	Ballynamorahan and Ballkillaboy east of mainline Ch. 3+980 to 5+030.	Augment retained and protected townland boundary strongly developed, tree-lined hedgerow with additional planting to top of cutting.
<b>LM12</b>	Ballykeoghan, west of mainline south of local road realignment Ch. 5+050.	Screen planting within remnant rectangular field as screening to local road embankment.
<b>LM 13</b>	Ballykeoghan, east of mainline Ch. 5+100 to 5+430	Compensatory woodland planting within field, also providing enhanced screening for property nos. 79 and 80.

**Table 10.5 (Cont'd) Outline of Specific Mitigation Measures - Waterford to King's River**

Ref	Location	Description
<b>LM14</b>	Ballykeoghan, West of mainline; Ch. 6+300 to 6+980	Minimum additional 10m wide area for landscaping for property nos. 85 to 90.
<b>LM15</b>	Rahard West, east of mainline Ch. 6+750 to 7+020 and returning east on south side of realigned local road.	Minimum 10 metres width of screen planting and landscape mitigation for property nos. 93 and 94.
<b>LM 16</b>	Rahard West, east of mainline Ch. 7+070 to 7+140.	Copse woodland as compensatory planting in remnant field adjacent to field access.
<b>LM17 &amp; LM18</b>	Ballykeoghan / Rossninan, West of mainline Ch. 7+250 to 8+270	Acquire land between proposed mainline and Ballykeoghan to Rossninan Local Road for landscape integration and screening from local road and property nos. 100, 102 and 103.
<b>LM19</b>	Scart, west side of mainline Ch. 8+260 to 8+300 and south side of realigned local road.	Create copse woodland and additional screening of realigned local road for property no. 105.
<b>LM20</b>	Rossninan West of mainline / south of local road re-alignment; Ch. 9+150	Provide for measures to minimise construction impact on existing dense vegetation.
<b>LM21 &amp; LM22</b>	Mullinavat Both sides of mainline north of Glendonnell local road re-alignment; Ch. 9+670 to 9+880	Acquire additional area of land on either side of mainline for landscape integration and screening from property nos. 122 to 124.
<b>LM23</b>	Mullinavat East of mainline/both sides of Ballyquin road re-alignment; Ch. 10+130 to 10+180	Acquire additional areas of land between local road re-alignment and existing road to south, and access road to north for landscape integration and screening from property nos. 129 to 131.
<b>LM24, LM25 &amp; LM26</b>	Mullinavat East of mainline/both sides of Ballyquin road re-alignment; Ch. 10+500 to 11+000	Acquire additional areas of land to NE / SE / SW of major junction for landscape integration and screening from property nos. 132 to 145 and other surrounding properties.
<b>LM 27</b>	Mullinavat, west of northbound sliproad at Mullinavat Junction Ch. 11+000 to 11+160.	Minimum 10 metres width of screen planting at top of cutting in an area of illumination. Mitigation for property nos. 147 to 149.
<b>LM28</b>	Ballylusky both sides of mainline Ch. 11+580 to 11+980	Acquire sufficient additional areas of land to east of mainline to provide approximately 1.5m high false cutting to top of proposed cutting as screening for property no. 152. Also min 10 metres screen planting for property no. 153.
<b>LM29</b>	Earlsrath West of mainline Ch. 12+200 to 13+080	Acquire sufficient additional areas of land to west of mainline to provide 10m wide plantation as re-instatement to planted Earlsrath Estate boundary.
<b>LM30</b>	Earlsrath, northeast of mainline Ch. 13+080 to 13+300	Create woodland planting of significant visual and habitat value extending to approx. 2.2ha.
<b>LM31</b>	Lukeswell/Manselscourt, both sides of mainline Ch. 13+650 to 13+680.	Create copse planting in remnant areas between toe of embankments and farm access underpasses on both sides.
<b>LM32</b>	Lukeswell, both sides of mainline at the Derrylacky River Ch. 13+820	Minimise impact on existing vegetation within tree groups T18 and impacted Landscape Character Area LC6. Provide for extensive and large scale strong replanting.
<b>LM33</b>	Lukewell, both sides of mainline at bridge crossing of existing N9. Ch. 14+330 to 14+450.	Minimise impact on existing vegetation during high level bridge construction over existing N9. Provide for extensive and large scale replanting.

**Table 10.5 (Cont'd) Outline of Specific Mitigation Measures - Waterford to King's River**

Ref	Location	Description
LM34	Knockmoylan, south of mainline and both sides of improved local road Ch. 14+880 to 14+960.	Create copse woodland planting in remnant fields both sides of upgraded local road.
LM35	Knockmoylan north of mainline Ch. 14+780 to 15+030.	Acquire additional minimum 10 metres width for screen planting at top of cutting as additional mitigation for property no. 163.
LM36	Knockmoylan, north of mainline Ch. 16+050 to 16+100.	Create copse woodland planting in remnant field to replace mature tree (T21) loss.
LM37	Keatingstown East of mainline Ch. 16+870 to 17+150	Acquire sufficient additional areas of land to east of mainline to provide approximately 1.5m high false cutting to top of slight embankment as screening for property no. 169.
LM38	Gorrue/Hugginstown Both sides of mainline Ch. 17+580 to 18+710	<p><b>BOTH SIDES</b></p> <p>Within the proposed land-take retain, where possible all existing mature trees, tree-lines and strong hedgerows for inherent habitat and strong screening value.</p> <p><b>WEST SIDE</b></p> <p>Ch. 17+670 to 17+870 – Acquire lands between proposed mainline and parallel hedgerow for separation and screening of alignment from Fen.</p> <p>Ch. 18+000 to 18+400 – Acquire lands between proposed mainline and existing Gorrue Local Road for separation and screening of alignment from Fen.</p> <p>Ch. 18+350 to 18+710 – Acquire additional minimum 10m wide area west of proposed mainline for separation and screening of alignment from Fen.</p> <p><b>EAST SIDE</b></p> <p>Ch. 17+580 to 17+880 – Acquire lands between proposed mainline and proposed re-alignment of Gorrue Local Road for visual separation of roads, local screening, and to reduce scale of road works in sensitive area.</p> <p>Ch. 17+950 to 18+450 – Acquire sufficient additional areas of and to east of mainline (<u>probably as extends as far as parallel hedgerow</u>) to provide approximately 1.5m high false cutting to top o slight embankment as screening for property no.94.</p>
LM39	Hugginstown Fen, west of mainline Ch. 19+100 to 19+240.	Acquire additional minimum 10 metres width for screen planting to reduce impact of small embankment and link severed hedgerows.
LM40	Kilkeasy, west of mainline and both sides of realigned local road to east of mainline Ch. 19+980 to 20+150.	Create copse woodland planting in remnant areas.
LM41	Kilkeasy West of mainline Ch. 20+180 to 20+750	Acquire sufficient additional areas of land to east of mainline to provide approximately 1.5m high false cutting to top of proposed cutting as screening for property no. 177.
LM42	Kilkeasy/Coolmore, east of mainline Ch. 20+750 to 21+320.	Create woodland planting of significant visual and habitat value extending to approx 2.3 ha.

**Table 10.5 (Cont'd) Outline of Specific Mitigation Measures - Waterford to King's River**

<b>Ref</b>	<b>Location</b>	<b>Description</b>
<b>LM43, LM44 &amp; LM45</b>	Coolmore Both sides of mainline / both sides of local road re- alignment; Ch. 21+400 to 21+880	Acquire additional area of land:- <ul style="list-style-type: none"> <li>- between proposed mainline and local road re-alignment to west,</li> <li>- between existing and re-aligned local roads on both sides of mainline, and</li> <li>- between proposed mainline and adjoining plantation to the east</li> <li>- minimum 10m wide to top of cutting to east side of mainline from Ch. 21+540 to 21+900</li> </ul> for landscape integration and screening from property nos. 181 to 185.
<b>LM46</b>	Carrickshock Both sides of mainline Ch. 22+040 to 22+900	Ensure sufficient areas of land exist for planting / mitigation at least 10m wide along part of both sides of mainline for landscape/habitat integration.
<b>LM47, LM48 &amp; LM 49</b>	Ballygeardra Both sides of mainline Ch. 23+300 to 23+480	<b>WEST SIDE</b>  Acquire minimum 10m wide additional area of land along toe of embankment for advance landscape screening for profoundly impacted property no. 207.  <b>EAST SIDE</b>  Consider very slight re-alignment away from this profoundly impacted property no. 206, <b>or</b> possible use of re-enforced retaining to reduce intrusion of embankment.
<b>LM50</b>	Knocktopher All round grade-separated junction. Ch. 25+180	<b>SOUTH-WEST</b>  Acquire minimum 10m additional land from Ch. 24+950 on wet of mainline round to entrance to property no. 208 on re-aligned Sheepstown Local Road as screening for property no. 208.  <b>NORTH-WEST</b>  Acquire lands between proposed junction access lanes and existing Sheepstown Local road as screening for property nos. 210, 211 and 212.  <b>NORTH-EAST</b>  Acquire lands between proposed junction access lanes and existing Sheepstown Local Road as screening for property nos. 216, 217 and 218.  <b>SOUTH-EAST</b>  Acquire remnant corner of field at eastern roundabout for general screening and landscape integration.
<b>LM51</b>	Knockadrina, west of mainline Ch. 26+200 to 27+700.	Acquire area between proposed mainline and parallel hedgerow for landscape and habitat integration and protection together with screening for property nos. 224, 224a and 225.
<b>LM52</b>	Knockadrina, east of mainline Ch. 26+420 to 27+100.	Acquire additional minimum 10 metres width for local screening of alignment and visual operation.
<b>LM53</b>	Knockadrina, west of mainline Ch. 27+100 to 27+170 and west side of realigned Danganbeg local road.	Acquire triangular area of land between mainline and proposed realignment of Knockadrina Local Road for visual separation of roads, local screening, to reduce scale of roadworks and for landscape integration in this sensitive area. Ensure sufficient land is available to provide minimum 5 metres wide screening planting.

**Table 10.5 (Cont'd) Outline of Specific Mitigation Measures - Waterford to King's River**

<b>Ref</b>	<b>Location</b>	<b>Description</b>
<b>LM54</b>	Knockadrina, east of mainline and east side of realigned Danganbeg local road. Ch. 26+930 to 27+770.	Acquire additional area of land between proposed mainline, realigned local road and existing deciduous plantation for protection, local screening and landscape integration in this sensitive area.
<b>LM55</b>	Knockadrina West of mainline Ch. 27+230 to 28+100	Acquire additional minimum 10m wide area west of proposed mainline for separation and local screening of alignment from property no.229.
<b>LM56</b>	Stonecarty West of mainline Ch. 28+470 to 28+900	Acquire additional minimum 10m wide area west of proposed mainline for separation and local screening of alignment from property no. 231.
<b>LM57</b>	Ballinavollaboy, east of mainline Ch. 28+480 to 29+100.	Acquire additional areas of land and create woodland planting.
<b>LM58</b>	Stonecarty West of mainline Ch. 29+420 to 29+520	Acquire additional minimum 10m wide area west of proposed mainline for separation and local screening of alignment from property no. 239.
<b>LM59</b>	Baunreagh, west of mainline. Ch. 30+000 to 30+220.	Create woodland planting for visual and ecological value, plus link between severe hedgerows.
<b>LM60 &amp; LM61</b>	Rathduff Both sides of mainline Ch. 30+750 to 31+280	<p><b>WEST SIDE</b></p> <p>Ch. 30+750 to 31+030 – Acquire lands between proposed mainline and parallel hedgerow for landscape and habitat integration and protection and local screening.</p> <p>Ch. 31+100 to 31+280 – Acquire additional minimum 10m wide area west of proposed mainline for strong screening and landscape and habitat integration.</p> <p><b>EAST SIDE</b></p> <p>Ch. 30+750 to 31+090 – Acquire additional minimum 10m wide area east of proposed mainline for separation and local screening of alignment from property nos. 242 to 255.</p> <p>Ch. 31+130 to 31+480 – Acquire additional minimum 10m wide area east of proposed mainline for strong screening and landscape and habitat integration.</p> <p><b>RATHDUFF LOCAL ROAD</b></p> <p>Acquire lands between existing and re-aligned Rathduff Local Roads for landscape protection and integration.</p>
<b>LM62</b>	King's River Valley Both sides of mainline Ch. 31+500 to 31+700	Ensure maximum protection of valley side vegetation.

**Table 10.6 Outline of Specific Mitigation Measures - King's River to Ballyquirke**

<b>Ref</b>	<b>Location</b>	<b>Description</b>
<b>LM62 &amp; LM63</b>	King's River Valley Both sides of mainline Ch. 31+500 to 31+700	Ensure maximum protection of valley side vegetation – possible use of long span bridging. Provide additional valleyside tree and shrub planting to enhance visual and habitat continuity.
<b>LM64</b>	Kellsgrange, west of mainline Ch. 33+660 to 33+730.	Acquire additional triangular area for copse woodland planting.
<b>LM65</b>	Ennisnag Stream Valley Both sides of mainline Ch. 34+000 to 34+200	Acquire lands between to either side of mainline for landscape and habitat integration – minimum 10m but extend to parallel hedgerows as appropriate especially to west side between Ch. 34+100 to 34+200
<b>LM66</b>	Danesfort East of mainline Ch. 34+600 to 35+160	Provide minimum 5 metres width of screen planting to enhance setting of Obelisk.
<b>LM66</b>	Danesfort All round grade-separated junction. Ch.35+300	<p><b>SOUTH-WEST</b></p> <p>Ensure minimum 5m land available along mainline and re-aligned N10 south-west from junction for screening in open landscape.</p> <p><b>NORTH-WEST</b></p> <p>Ensure minimum 10m land available along mainline and re-aligned N10 north-west from junction to Ballyda. Entrance for screening of junction in open landscape.</p> <p><b>NORTH-EAST</b></p> <p>Ensure minimum 5m land available along mainline and re-aligned N10 south-west from junction to properties along existing N10 for screening in open landscape.</p> <p><b>SOUTH-EAST</b></p> <p>Ensure minimum 10m land available along mainline and 5m along re-aligned N10 south-east from junction to tie-in for screening in open landscape.</p>
<b>LM67</b>	Croan South-east of mainline Ch. 35+980+ to 36+200	Acquire additional minimum 10m wide area south-east of proposed mainline for separation and local screening of alignment from property nos. 289 to 295.
<b>LM68</b>	Rathclogh, both sides of mainline Ch. 37+020 to 37+260.	Acquire additional areas of land, especially on southeast side of minimum 10 metre width as mitigation for property no. 313.
<b>LM69</b>	Kilree/Bennettsbridge both sides of mainline Ch. 37+750 to 39+000.	Acquire significant additional areas for woodland planting and specific screen planting (10 metre minimum width Ch. 37+750 to 37+950 east side as mitigation for property nos. 317 and 322).
<b>LM70</b>	Kilree South of mainline Ch. 39+090 – Ch39+530	Ensure additional minimum 10m wide area south of proposed mainline for local screening of alignment from properties nos. 336, 337, 348, 349 and 350 to 353.

**Table 10.6. (Cont'd) Outline of Specific Mitigation Measures - King's River to Ballyquirke**

<b>Ref</b>	<b>Location</b>	<b>Description</b>
<b>LM71</b>	River Nore Valley Both sides of mainline Ch. 39+800 to 40+100	Ensure maximum protection of valley riverside vegetation –use of long span bridging. Diverse landscape treatment to be applied to embankments leading to bridge. Treatments to include a divers planting of trees and shrubs appropriate to the existing natural vegetation of the valley.
<b>LM72</b>	Dunbell Little, both sides of mainline Ch. 40+320 to 40+500	Acquire remnant of severed field on north side for landscape integration and screening from property nos. 360 to 365. Ensure northern part of existing scrub/woodland is kept to provide mature screening. Acquire remnant field on south side for screening of properties nos. 356 to 358.
<b>LM73</b>	Dunbell Little, north of mainline Ch. 40+500 to 41+180	Acquire additional minimum 10m wide area north of proposed mainline for local screening of alignment from property nos. 365 and 366.
<b>LM74</b>	Holdenstown East of mainline Ch. 42+300 to 43+240	Acquire additional minimum 10m wide area south of proposed mainline for local screening of alignment from property nos. 371, 372 and 384 and for habitat connection.
<b>LM75</b>	Dunbell Big West of mainline Ch. 43+000 to 43+180	Acquire additional areas west of proposed mainline including triangular areas of severed field for local screening of alignment from property nos. 381 & 382.
<b>LM75</b>	Roughfield West of mainline Ch. 43+160 to 43+750	Acquire lands between proposed mainline and re-aligned Roughfield Local Road for landscape screening, road separation and integration.
<b>LM75a</b>	Dunbeg Big, east of mainline Ch. 43+600 to 43+730	Acquire additional minimum 10 metres width for screen planting as mitigation for property no. 390.
<b>LM76</b>	Roughfield West of mainline Ch. 43+750 to 44+380	Acquire additional minimum 10m wide area west of proposed mainline for local screening of alignment from property nos. 394 and 394a and for habitat connection.
<b>LM83</b>	Dunbell All round grade-separated junction Ch. 44+600	Acquire additional minimum 10m wide area all round junction for local screening and landscape integration in open arable context. Incorporate small existing copse to north-west if possible.
<b>LM84</b>	Rathcash Both sides of mainline Ch. 45+290 to 46+300	<b>SOUTH SIDE</b>  Ch. 45+290 to 45+800 – Acquire additional land between proposed mainline and adjoining hedgerow and copse for landscape protection, integration and habitat connection.  <b>NORTH SIDE</b>  Ch. 46+060 to 46+300 – Acquire additional land including remnant of small impacted copse and land between proposed mainline and adjoining hedgerow and second copse for landscape protection, integration and habitat connection.
<b>LM85</b>	Rathcash Both sides of mainline / east of local road re-alignment Ch. 46+500 to 46+870	Acquire lands between existing and re-aligned Rathcash Local Road for landscape screening, road separation and integration for property nos. 442 to 446.
<b>LM86</b>	Rathcash North of mainline Ch. 47+010 to 48+300	Acquire lands between proposed mainline and adjoining residential plot for landscape screening and integration for property nos. 447 to 450.
<b>LM87</b>	Blanchvillespark North-west of mainline Ch. 47+560 to 48+000	Acquire additional minimum 10m wide area along toe of embankment for advance screening for property nos. 456 and 457.
<b>LM87</b>	Blanchvillespark South-east of mainline Ch. 47+800 to 48+220	Acquire additional minimum 10m wide area along toe of embankment for advance screening for property no. 458.

**Table 10.6. (Cont'd) Outline of Specific Mitigation Measures - King's River to Ballyquirke**

<b>Ref</b>	<b>Location</b>	<b>Description</b>
<b>LM88</b>	Blanchvillespark South-east of mainline Ch. 48+360 to 48+700	Acquire additional minimum 10m wide area along toe of embankment and at-grade section for screening for property no. 462 and habitat connection.
<b>LM89</b>	Flagmount South, northwest of mainline Ch. 49+120 to 49+200	Acquire triangular area of land between mainline and local road link for copse woodland.
<b>LM77</b>	Rathgarvan North side of Kilkenny Link Ch. 6+400 to 7+100	Acquire additional minimum 10m wide area along alignment for possible false cutting and screening for property no. 400, Rathgarvan House and associated castle etc.
<b>LM78</b>	Ballynamona, north of Kilkenny Link Ch. 5+550 to 5+810.	Acquire additional lands to parallel field boundary to provide screen planting of embankment in relation to property no. 402.
<b>LM79</b>	Templemartin Both sides of Kilkenny Link Ch. 4+330 to 4+680	<b>NORTH SIDE</b>  Ch. 4+330 to 4+610 - Acquire additional minimum 10m wide area along alignment for possible false cutting and screening for property no. 419. Avoiding impact on southern corner of garden to property no. 419 (Ch. 4+500)  <b>SOUTH SIDE</b>  Ch. 4+450 to 4+680 - Acquire additional minimum 10m wide area along alignment for screening for property nos. 404 to 406 & 417.
<b>LM80</b>	Lyrath Estate South of Kilkenny Link Ch. 3+080 to 4+120	Acquire additional lands between proposed link road and Lyrath Estate Boundary for landscape protection, integration and boundary re-enforcement.
<b>LM81</b>	Archersrath North of Kilkenny Link Ch. 1+680 to 2+310	Acquire additional minimum 10m wide area along top of cutting and at-grade section for possible false cutting and screening for property nos. 435 to 430 including nursing home.
<b>LM82</b>	Blanchfieldsland North of Kilkenny Link Ch. 1+260 to 1+420	Acquire triangular remains of severed field as screening for property no. 436 and landscape integration.

**Table 10.7 Outline of Specific Mitigation Measures - Ballyquirke to Powerstown**

Ref	Location	Description
LM90	Ballyquirke Service Area, both sides of mainline Ch. 60+030 to 60+600.	Screen planting proposed for landscape bunds on both sides of mainline, with individual tree planting groups within grass areas elsewhere.
LM91	Ballyquirke, both sides of mainline Ch. 60+570 to 60+750.	Acquire remnant areas adjacent to agricultural underpass and utilise as copse woodland.
LM92	Ballyquirke, both sides of mainline Ch. 61+100 to 61+220.	Acquire remnant areas and utilise as copse woodland.
LM93	Ballyquirke North, southeast of mainline around attenuation pond Ch. 62+230 to 62+360.	Allowing for maintenance access requirement, plant as copse woodland/riparian landscape.
LM94	Monefelim river, Ballyvalden northwest of mainline Ch. 62+430 to 63+330.	Provide screen woodland planting to embankment slope.
LM95	Ballyvalden. Southeast of mainline. Ch. 62+700 to 62+900	Area along mainline to be planted with native woodland species with shrub edge and min. 20% Scots Pine near residences for screening property nos. 480 and 481. .
LM96	Jordanstown, southwest of mainline around attenuation pond Ch. 63+800 to 64+100.	Allowing for maintenance access requirement, plant as copse woodland/riparian landscape.
LM97	Jordanstown overbridge. Jordanstown Junction	Area within slip roads and northwest edge to screen properties on Kellymount Road. Additional planting in remnant fields parallel to railway line on northside.
LM98	Jordanstown. North of Junction 6 west side. Ch. 64+860 to 65+040	Area along west side of mainline. Minimum 10 metres width of native woodland species with shrub edge and min. 20% Scots Pine near residences for screening property no. 512.
LM99	Paulstown. N9 to N10 Link Road, Roundabout with N9 at Ch. 0+850	Acquire remnant corner of fields to north west and south east of roundabout for general screening and landscape integration. Screen planting in field to north west as mitigation for property no. 521, 522 and 524.
LM101	Jordanstown/Shankill West of mainline. Ch. 65+720 to 66+600	Area along west side of mainline. Minimum 10 metres width of native woodland species with shrub edge and min. 20% Scots Pine. This in addition to hedgerow with randomly space trees along mainline boundary as mitigation for property nos. 525 to 527.
LM102	Moanmore on both sides of mainline. North of L6674 realigned overbridge. Ch. 66+700 to 66+950	On both sides minimum 10 metres for additional screening at west side of mainline and north side of realigned L6674 Moanmore road, and on east side of mainline.
LM103	Moanmore. West of mainline. Ch. 67+070 to 67+250	Area along west side of mainline. Minimum 10 metres width of native woodland species with shrub edge and min. 20% Scots Pine near residences for screening property no. 534.
LM104	Moanmore, Westside of mainline and southside of overbridge embankment Ch. 67+460 to 67+800.	Acquire additional area of land minimum 10 metres width for screen planting as mitigation for property no. 535.
LM105	Moanmore, eastside of mainline Ch. 68+300 to 68+620.	Acquire area between mainline and realigned local road. Plant copse woodland as enhanced mitigation for property no. 536.
LM106	Tinnagarney. East of mainline. Ch. 68+780 to 68+910	Area along east side of mainline. Minimum 10 metres width of native woodland species with shrub edge and min. 20% Scots Pine near residences for screening property no. 535.

**Table 10.7 (Cont'd) Outline of Specific Mitigation Measures - Ballyquirke to Powerstown**

<b>Ref</b>	<b>Location</b>	<b>Description</b>
<b>LM107</b>	Moanmore both sides of mainline and both sides of western embankment of Closutton road overbridge Ch. 69+020 to 69+580.	Provide screen planting west side between mainline and field access track, also east side adjacent to lay-by. Also screen planting to local road embankment to enhance mitigation for property no. 551.
<b>LM108</b>	Ballynolan. West of mainline. Ch. 70+940 to 71+100	Area along wet side of mainline. Minimum 10 metres width of native woodland species with shrub edge and min. 20% Scots Pine near residences for screening property no. 559.
<b>LM109</b>	Ballynolan, east side of mainline Ch. 71+300 to 71+400 around attenuation pond.	Allowing for maintenance access requirement, plant as copse woodland/riparian landscape.
<b>LM110</b>	Seskin. Both sides of mainline. Ch. 72+400 to 72+740	Areas on both sides of mainline. On west side remnant fields to be planted on east side min. 10 metres for additional screening between top of cutting and edge of access track. In both cases areas to be planted with native woodland species with shrub edge and min. 20% Scots Pine. Screening for property nos. 566 and 567.
<b>LM111</b>	Seskin. West of mainline. Ch. 73+000 to 73+780	Area along west side of mainline. Minimum 10 metres width of native woodland species with shrub edge and min. 20% Scots Pine near residences for screening properties across large open field (nos. 569 to 571 and no. 577).
<b>LM112</b>	Cran House. Southeast of mainline. Ch. 73+780 to 74+180.	Area along east side of mainline. Minimum 10 metres width of native woodland species with shrub edge and min. 20% Scots Pine near residences for screening property no. 579.
<b>LM113</b>	Tomard. Both sides of mainline. Eastside Ch. 74+550 to 74+720 and Westside Ch. 74+550 to 75+000	Area along both sides of mainline. Minimum 10 metres width of native woodland species with shrub edge and min. 20% Scots Pine near residences for screening property nos. 583 and 584.
<b>LM114</b>	Tomard. Both sides of mainline. Ch. 74+950 to 75+160	Areas on both sides of mainline. Remnant field between existing and realigned Tomard Lower road overbridge to be planted, and alongside mainline, min. 10 metres for additional screening. In both cases areas to be planted with native woodland species with shrub edge and 20% Scots Pine.
<b>LM115</b>	Barrow River crossing, both sides of river valley and both sides of mainline between Ch. 75+620 and 75+880.	Provide additional woodland planting adjacent to existing and along embankment in accordance with ecological mitigation proposals. (See site F21 Section 11.5.2 of Chapter 11)
<b>LM116</b>	Powerstown Junction at Ch. 76+450	Provide woodland planting within areas between slip-roads and mainline and also to area proposed for 'possible construction site compound' on completion of works.
<b>LM117</b>	Powerstown Junction, realigned N9 north east side Ch. 0+010 to 0+110	Acquire additional minimum 10 metres width for screen planting to link with similar on Kilcullen to Powerstown section as mitigation for property no. 603.